

Electromagnetic Emissions Test Report Application for Grant of Equipment Authorization pursuant to Industry Canada RSS-Gen Issue 1 / RSS 210 Issue 6 FCC Part 15 Subpart C on the Cisco-Linksys **Transmitter** Model: WRT600N

UPN:

3839A-WRT6NV11

FCC ID:

Q87-WRT600NV11

GRANTEE:

Cisco-Linksys

121 Theory Drive Irvine, CA 92617

TEST SITE:

Elliott Laboratories, Inc.

684 W. Maude Ave

Sunnyvale, CA 94086

REPORT DATE:

April 6, 2007

FINAL TEST DATE:

March 20, March 22, March 26,

March 27 and March 28, 2007

AUTHORIZED SIGNATORY:

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Senior EMC Engineer



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REVISION HISTORY

Revision #	Date	Comments	Modified By
1	April 10, 2007	Initial Release	David Guidotti

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SCOPE

An electromagnetic emissions test has been performed on the Cisco-Linksys LLC model WRT600N pursuant to the following rules:

Industry Canada RSS-Gen Issue 1 RSS 210 Issue 6 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment" FCC Part 15 Subpart C

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in Elliott Laboratories test procedures:

ANSI C63.4:2003 RSS-212 Issue 1 Test Facilities and Test Methods for Radio Equipment

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the Cisco-Linksys LLC model WRT600N and therefore apply only to the tested sample. The sample was selected and prepared by Jennifer Yu of Cisco-Linksys

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OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, all unlicensed transmitters and transceivers require certification. Receive-only devices operating between 30 MHz and 960 MHz are subject to either certification or a manufacturer's declaration of conformity, with all other receive-only devices exempt from the technical requirements.

Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification. Class II devices are required to meet the appropriate technical requirements but are exempt from certification requirements.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or gant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

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STATEMENT OF COMPLIANCE

The tested sample of Cisco-Linksys LLC model WRT600N complied with the requirements of the following regulations:

Industry Canada RSS-Gen Issue 1 RSS 210 Issue 6 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment" FCC Part 15 Subpart C

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

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TEST RESULTS SUMMARY

DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM / DSSS techniques	-	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	802.11b = 10.2 MHz 802.11g = 16.6 MHz 802.11Siso = 36.8 MHz 802.11n 20MHz = 17.8 MHz 802.11n 40MHz = 36.7 MHz	>500kHz	Complies
	RSP100	99% Bandwidth	802.11b = 13.7 MHz 802.11g = 17.8 MHz 802.11Siso = 36.9 MHz 802.11n 20MHz = 18.4 MHz 802.11n 40MHz = 37.1 MHz	Information only	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	21.5 dBm (.141 Watts) EIRP = 0.649 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	6.5 dBm/3kHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	Refer to plots	$<$ -30dBc $^{Note 2}$	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	50.7dBμV/m (342.8μV/m) @ 3453.3MHz (-3.3dB)	15.207 in restricted bands, all others <-30dBc Note 2	Complies

Note 1: EIRP calculated using antenna gain of 3.6 dBi for the highest EIRP multi-point system.

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst) / RMS averaging over a time interval, as permitted under RSS 210 section A8.4(4).

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GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Integral to the device. User will not have access or be able to open the device.		Complies
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	49.4dBμV/m (295.1μV/m) @ 4924.0MHz		Complies (- 4.6 dB)
15.207	RSS GEN Table 2	AC Conducted Emissions	Refer to data	Refer to standard	Complies
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in Exhibit 11, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding non- interference	
	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding detachable antenna	

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MEASUREMENT UNCERTAINTIES

ISO Guide 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	0.015 to 30	± 3.0
Radiated Emissions	30 to 1000	± 3.6
Radiated Emissions	1000 to 40000	± 6.0

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EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The EUT is a Dual-band Wireless-N Router that is designed to provide wireless internet and networking services. Since the EUT would be placed on a tabletop during operation, the EUT was treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120 Volts, 60 Hz, .5 Amps.

The sample was received on March 20, 2007 and tested on March 20, March 22, March 26, March 27 and March 28, 2007. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
Cisco-Linksys	WRT600N	Dual-band	-	Q87-
LLC		Wireless-N Router		WRT600NV1

OTHER FUT DETAILS

List any items from the test log.

ANTENNA SYSTEM

The integral antenna system used with the Cisco-Linksys LLC model WRT600N consists of a diple antenna with a maximum gain of 3.6dBi, PiFA antenna maximum gain 2.5, and a PCB antenna maximum gain 1.9dBi.

ENCLOSURE

The EUT enclosure is primarily constructed of plastic. It measures approximately 30 cm wide by 5 cm deep by 25 cm high.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with emissions specifications.

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SUPPORT EQUIPMENT

The following equipment was used as local support equipment for emissions testing:

Manufacturer	Model	Description	Serial Number	FCC ID
-	-	-	-	1

The following equipment was used as remote support equipment for emissions testing:

Manufacturer	Model	Description	Serial Number	FCC ID
Hewlett Packard	Zv6000	Laptop	CBD52904S1	DoC

EUT INTERFACE PORTS

The I/O cabling configuration during emissions testing was as follows:

Port	Connected To	Cable(s)		
TOIT	Connected 10	Description	Shielded or Unshielded	Length(m)
Ethernet	Laptop	Cat5	Unshielded	1.0
AC power	AC mains	-	-	-

EUT OPERATION

During emissions testing the EUT was set to either to transmit at maximum power or receive on appropriate channels.

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TEST SITE

GENERAL INFORMATION

Final test measurements were taken on March 20, March 22, March 26, March 27 and March 28, 2007at the Elliott Laboratories Open Area Test Site # located at 684 West Maude Avenue, Sunnyvale, California or 41039 Boyce Road, Fremont, California Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission.

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003 and RSS 212.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4:2003 and RSS 212. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4:2003 / RSS 212.

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MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

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FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.4:2003 and RSS 212 specify that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

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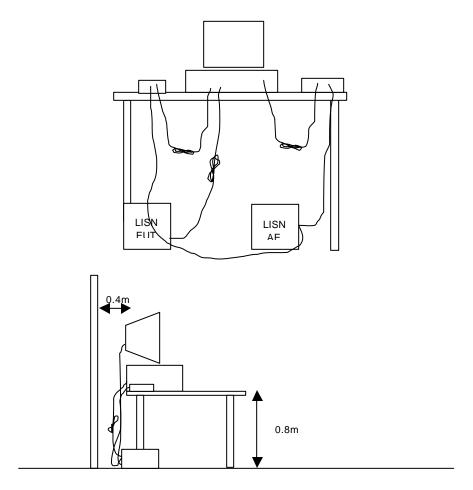
TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4:2003, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.



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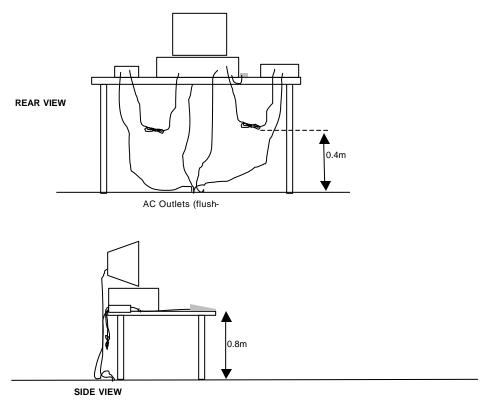
RADIATED EMISSIONS

A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

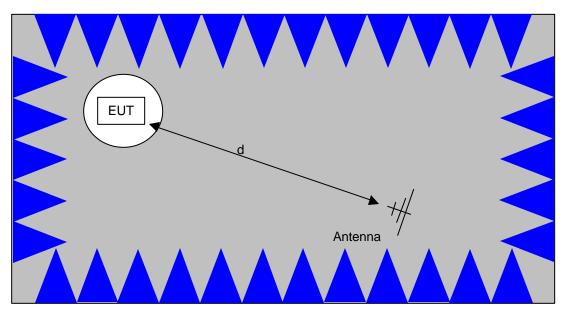
Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



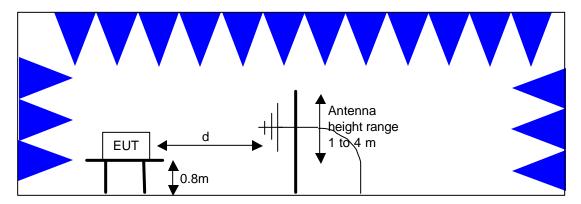
Typical Test Configuration for Radiated Field Strength Measurements

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The anechoic materials on the walls and ceiling ensure compliance with the normalized site attenuation requirements of CISPR 16 / CISPR 22 / ANSI C63.4 for an alternate test site at the measurement distances used.

Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



<u>Test Configuration for Radiated Field Strength Measurements</u> <u>Semi-Anechoic Chamber, Plan and Side Views</u>

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BANDWIDTH MEASUREMENTS

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

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GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands¹ (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	2400/F _{KHz} @ 300m	67.6-20*log ₁₀ (F _{KHz}) @ 300m
0.490-1.705	24000/F _{KHz} @ 30m	87.6-20*log ₁₀ (F _{KHz}) @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS 210 Table 2, RSS GEN Table 1 and RSS 310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

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¹ The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

OUTPUT POWER LIMITS - DIGITAL TRANSMISSION SYSTEMS

The table below shows the limits for output power and output power density. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
902 – 928	1 Watt (30 dBm)	8 dBm/3kHz
2400 – 2483.5	1 Watt (30 dBm)	8 dBm/3kHz
5725 - 5850	1 Watt (30 dBm)	8 dBm/3kHz

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5850 MHz band are not subject to this restriction.

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

The limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands are those specified in the general limits sections of FCC Part 15 and RSS 210. All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest in-band signal level (30dB if the power is measured using the sample detector/power averaging method).

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SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - S = M$$

where:

 R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

 F_d = Distance Factor in dB

 $D_m = Measurement Distance in meters$

 D_S = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40*LOG_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

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The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_C - L_S$$

where:

 R_r = Receiver Reading in dBuV/m

 F_d = Distance Factor in dB

 R_C = Corrected Reading in dBuV/m

 L_S = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of 3m from the equipment under test:

$$E = \frac{1000000 \text{ v } 30 \text{ P}}{3} \quad \text{microvolts per meter}$$

where P is the eirp (Watts)

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EXHIBIT 1: Test Equipment Calibration Data

1 Page

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Radio Antenna Port (Power and Spurious Emissions), 23-Mar-07

Engineer: Mark Hill

<u>Manufacturer</u>	<u>Description</u>	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	786	28-Nov-07
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FMT (SA40) Blue	8564E (84125C)	1393	09-Jan-08
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	08-Aug-07

Radio Antenna Port (Power and Spurious Emissions), 20-Mar to 28-Mar-07 Engineer: Juan Martinez, Rafael Varelas

Engineer. Juan wartinez				
<u>Manufacturer</u>	<u>Description</u>	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	16-Mar-08
EMCO	Antenna, Horn, 1-18 GHz	3115	786	28-Nov-07
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FMT (SA40) Blue	8564E (84125C)	1393	09-Jan-08

EXHIBIT 2: Test Measurement Data

162 Pages

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Elliot		ЕМ	C Test Data
Client:	Cisco-Linksys	Job Number:	J67313
Model:	WRT600N	Test-Log Number:	T67324
		Project Manager:	-
Contact:	Kevin Lee		
Emissions Spec:	FCC 15.247	Class:	Radio
Immunity Spec:	-	Environment:	-

For The

Cisco-Linksys

Model

WRT600N

Date of Last Test: 4/3/2007



Client:	Cisco-Linksys	Job Number:	J67313
Model:	WRT600N	Test-Log Number:	T67324
		Project Manager:	-
Contact:	Kevin Lee		
Emissions Spec:	FCC 15.247	Class:	Radio
Immunity Spec:	-	Environment:	-

EUT INFORMATION

The following information was collected during the test sessions(s).

General Description

The EUT is a Dual-band Wireless-N Router that is designed to provide wireless internet and networking services. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120 Volts, 60 Hz, .5 Amps.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Cisco-Linksys LLC	WRT600N	Dual-band Wireless-N	-	Q87-WRT600NV1

Other EUT Details

None

EUT Antenna (Intentional Radiators Only)

The antenna is integral to the device. A diple antenna with a maximum gain of 3.6dBi, PiFA antenna maximum gain 2.5, and a PCB antenna maximum gain 1.9dBi.

EUT Enclosure

The EUT enclosure is primarily constructed of plastic. It measures approximately 30 cm wide by 5 cm deep by 25 cm high.

Elli	ott			EM	C Test Data
(Client: Cisco-Linksys			Job Number:	J67313
	Model: WRT600N			Test-Log Number:	
	ntact: Kevin Lee				-
	Spec: FCC 15.247			Class:	Radio
Immunity				Environment:	-
illilliulity .	Spec			LIIVIIOIIIIIGIIL.	•
			ation History		
Mod.#	Test	Date		Modification	
1					
2					
3					



Client:	Cisco-Linksys	Job Number:	J67313
Model:	WRT600N	T-Log Number:	T67324
		Project Manager:	-
Contact:	Kevin Lee		
Emissions Spec:	FCC 15.247	Class:	Radio
Immunity Spec:	-	Environment:	-

Test Configuration #1

The following information was collected during the test sessions(s).

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
=	=	=	-	-

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Hewlett Packard	zv6000	Laptop	CND52904S1	DoC

Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Ethernet	Laptop	Cat5	Unshielded	1.0
AC Power	AC Mains	-	-	-

EUT Operation During Emissions Tests

During emissions testing the EUT was set to either to transmit at maximum power or receive on appropriate channels.

_			
Client:	Cisco-Linksys	Job Number:	J67313
Model: WRT600N	T-Log Number:	T67324	
	WRIOUUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

RSS 210 and FCC 15.247 Bandedges

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 3/20/2007 Config. Used: 1 Test Engineer: Jmartinez Config Change: None Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 18 °C

Rel. Humidity: 37 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1 (802.11b Mode)	Bandedges	FCC Part 15.209 / 15.247(c)	Pass	Refer to runs
2 (802.11g Mode)	Bandedges	FCC Part 15.209 / 15.247(c)	Pass	Refer to runs
3 (802.11Siso Mode)	Bandedges	FCC Part 15.209 / 15.247(c)	Pass	Refer to runs
4 (802.11n 40 MHz Mode)	Bandedges	FCC Part 15.209 / 15.247(c)	Pass	Refer to runs
5 (802.11n 20 MHz Mode)	Bandedges	FCC Part 15.209 / 15.247(c)	Pass	Refer to runs

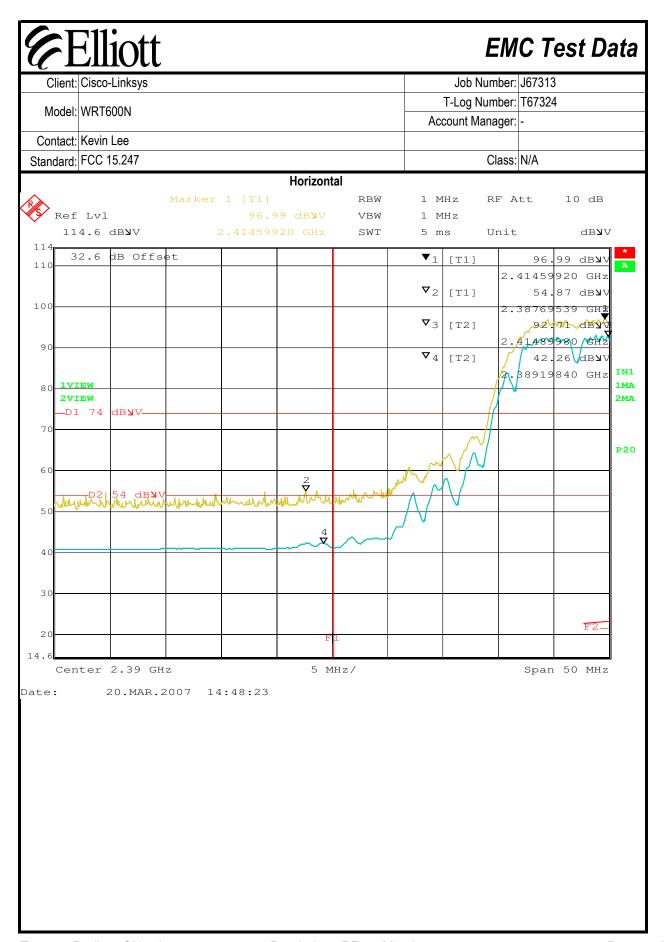
Modifications Made During Testing:

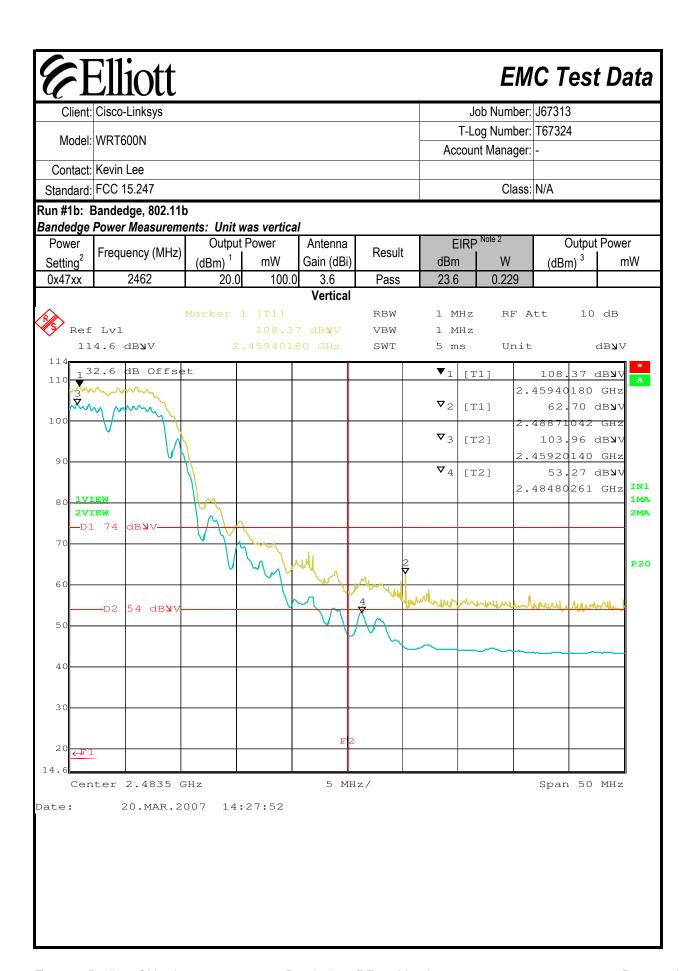
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

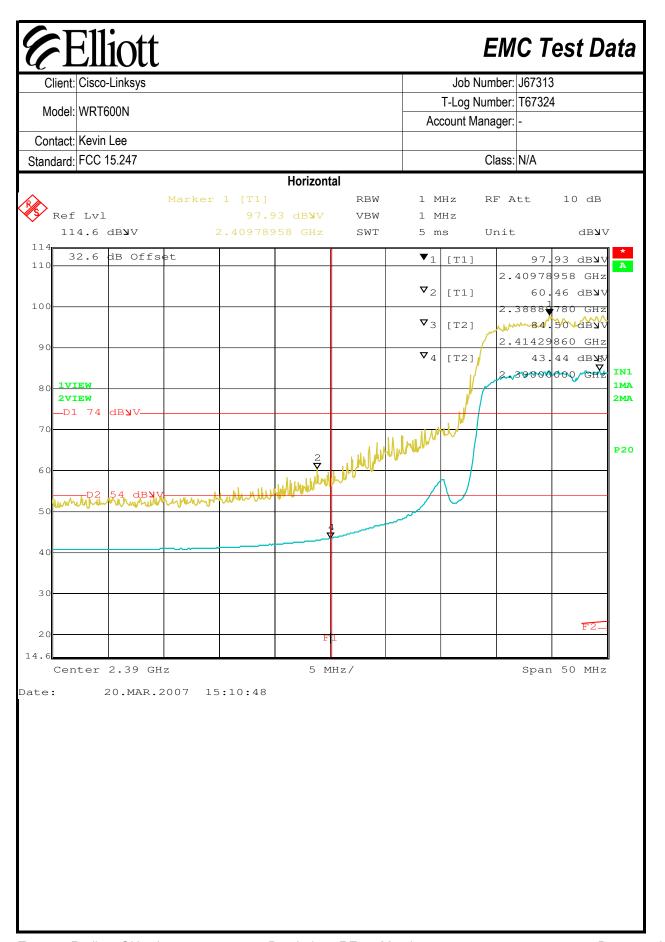
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1a: Bandedge, 802.11b Bandedge Power Measurements: Unit was vertical EIRP Note 2 Output Power **Output Power** Power Antenna Frequency (MHz) Result (dBm) 1 Setting² mW Gain (dBi) dBm W (dBm)³ mW 0.229 0x40xx 2412 20.0 100.0 23.6 3.6 **Pass** Vertical RF Att 10 dB RBW 1 MHz Ref Lvl 108.88 dB**y**V VBW 1 MHz 114.6 dB**y**V 5 ms SWT Unit dB**y**V 32.6 dB Offset lacksquare1 [T1] 108.88 dB 110 2.41**459920/**GH **v**₂ [T1] 100 **v**₃ [T2] 104. 59 dB**y** V41489980 GHz 9 ([T2] 52.29 dB**y** TN1 2.38919840 GHz 1MA 2MA dB**y**v-P20 60 MUMB 40 30 20 Center 2.39 GHz 5 MHz/ Span 50 MHz Date: 20.MAR.2007 14:44:27

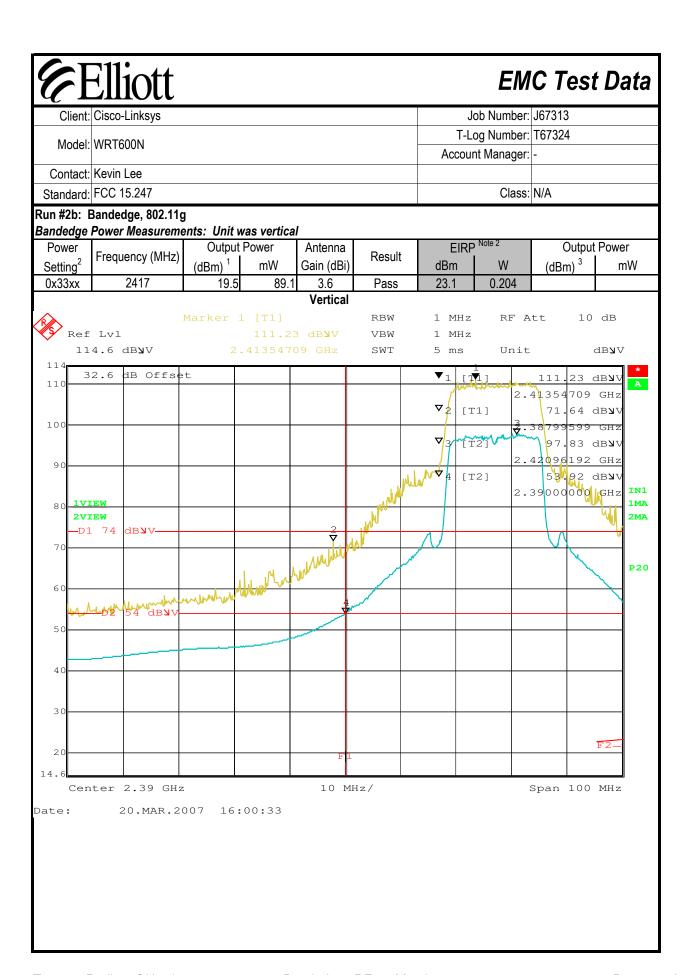


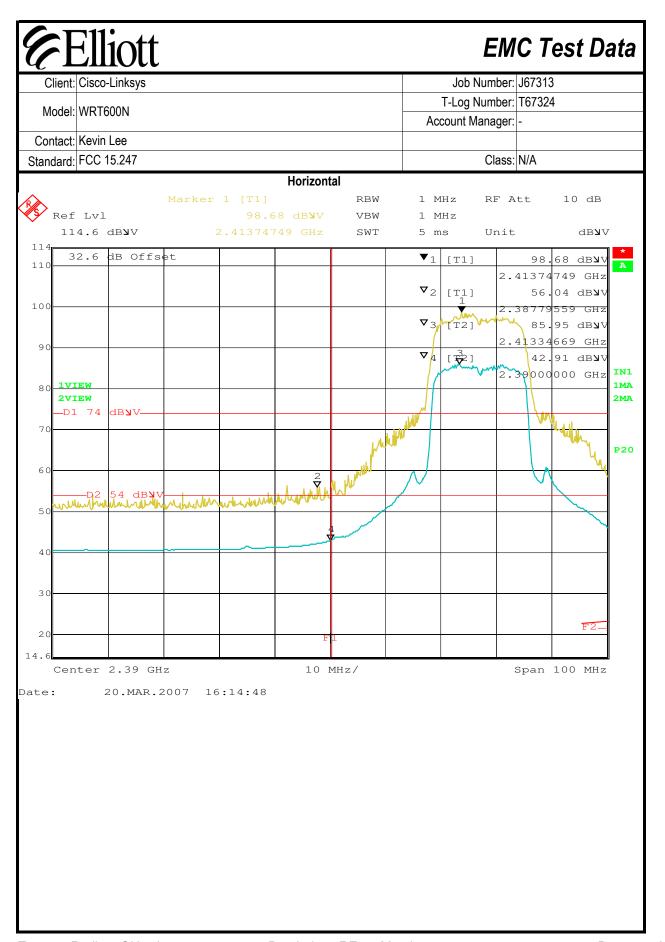


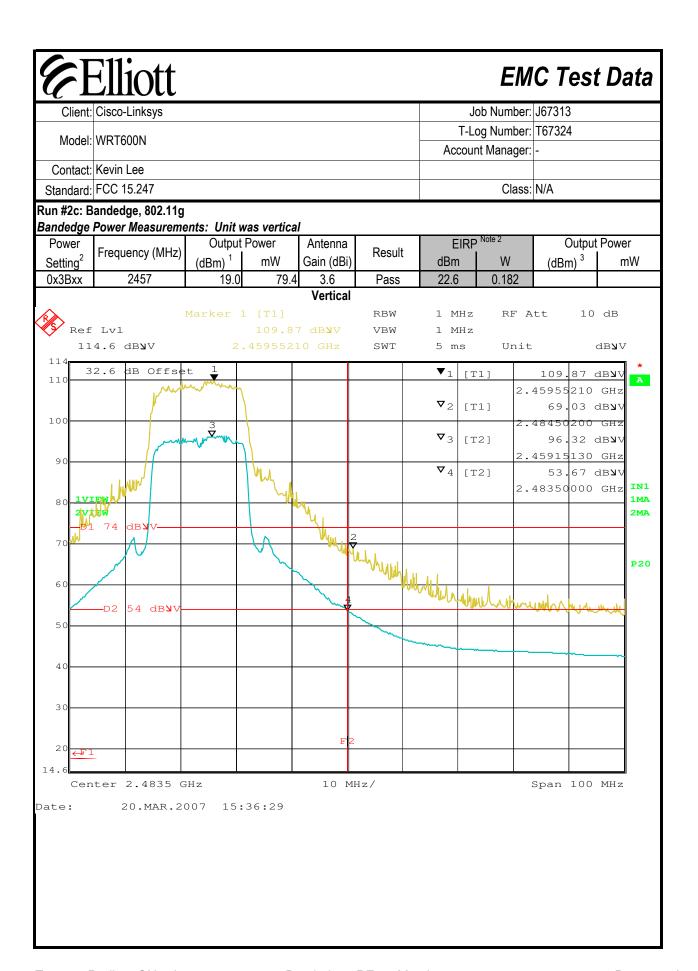


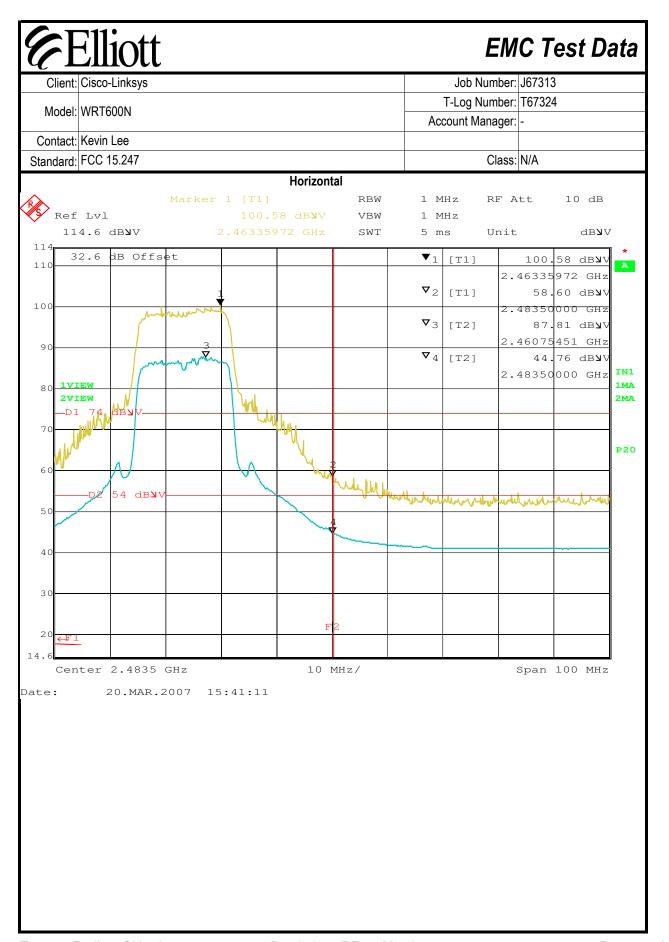
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #2a: Bandedge, 802.11g Bandedge Power Measurements: Unit was vertical EIRP Note 2 Output Power Output Power Power Antenna Frequency (MHz) Result (dBm) ¹ (dBm)³ Setting² mW Gain (dBi) dBm W mW 2412 0x3Axx 17.5 56.2 3.6 Pass 21.1 0.129 Vertical RBW 1 MHz RF Att 10 dB Ref Lvl 109.61 dB**y**V VBW 1 MHz 114.6 dB**y**V SWT 5 ms Unit dByv 114 32.6 dB Offset **▼**1 | [T1] 10⊈ 61 dB**y**' 110 2.40938878VGH2 ∇_2 [T1] 72. 70 dB 100 **V**3 [T2] 40838677 53.34 dB [T2] Standard Company of the Company of t 2.39000000 GHz 1MA 2VIEW 2MA P20 40 30 Center 2.39 GHz 5 MHz/ Span 50 MHz Date: 20.MAR.2007 15:05:12

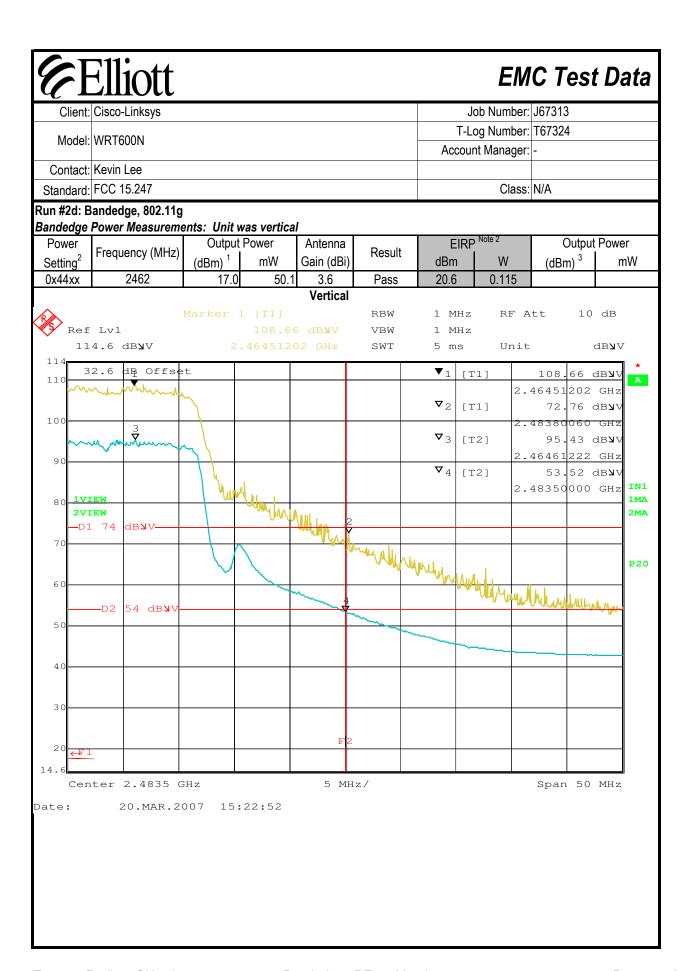






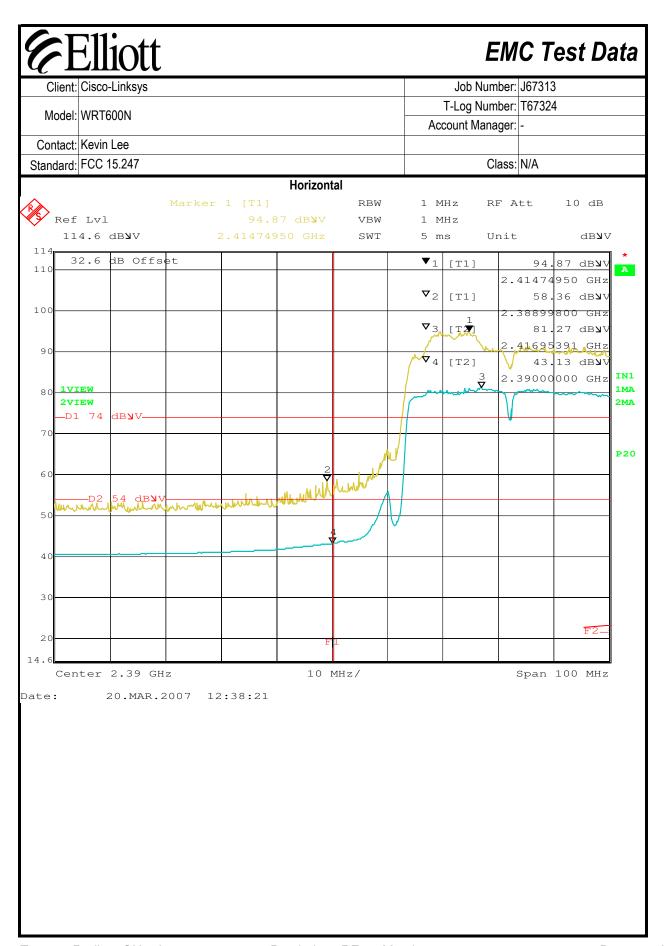




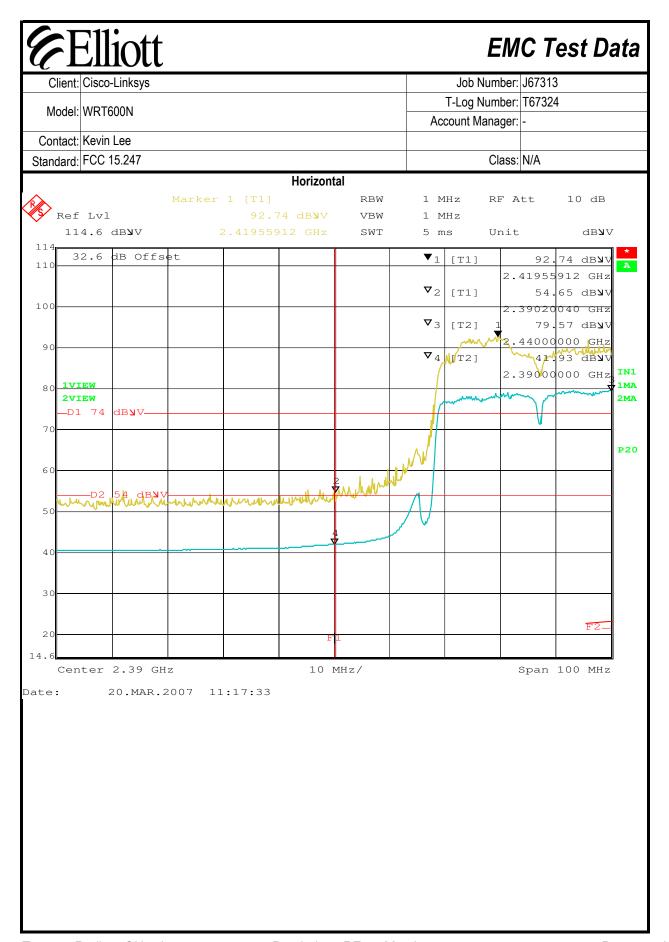




EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #3a: Bandedge, 802.11 (SISO) Bandedge Power Measurements: Unit was vertical EIRP Note 2 Output Power (dBm) Note 1 Power Antenna Gain (dBi) Note 3 Frequency (MHz) Chain 1 Chain 2 Chain 1 Chain 2 dBm W Setting⁴ Total Total 0x43xx 2422 15.5 15.5 3.6 19.2 0.082 Vertical RBW 1 MHz RF Att 10 dB Ref Lvl 107.65 dB**y**V VBW 1 MHz 114.6 dB**y**V SWT 5 ms Unit dByv 114 32.6 dB Offset [T4] 107.65 dB 110 A 2.41454910 GHz wytyzendby 100 **7**3 | [T2**y** 94. 39 db**y**' 41575150 GHz [T2] 53.56 dB 2.39000000 GHz 1MA 2VIEW 2MA White the following of P20 40 Center 2.39 GHz 10 MHz/ Span 100 MHz Date: 20.MAR.2007 12:28:47

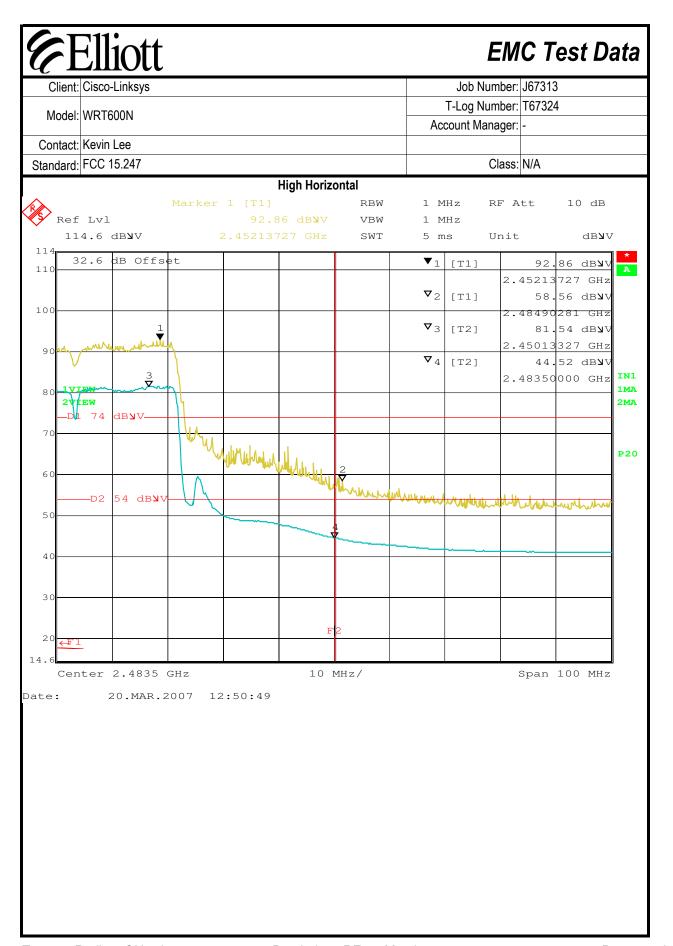


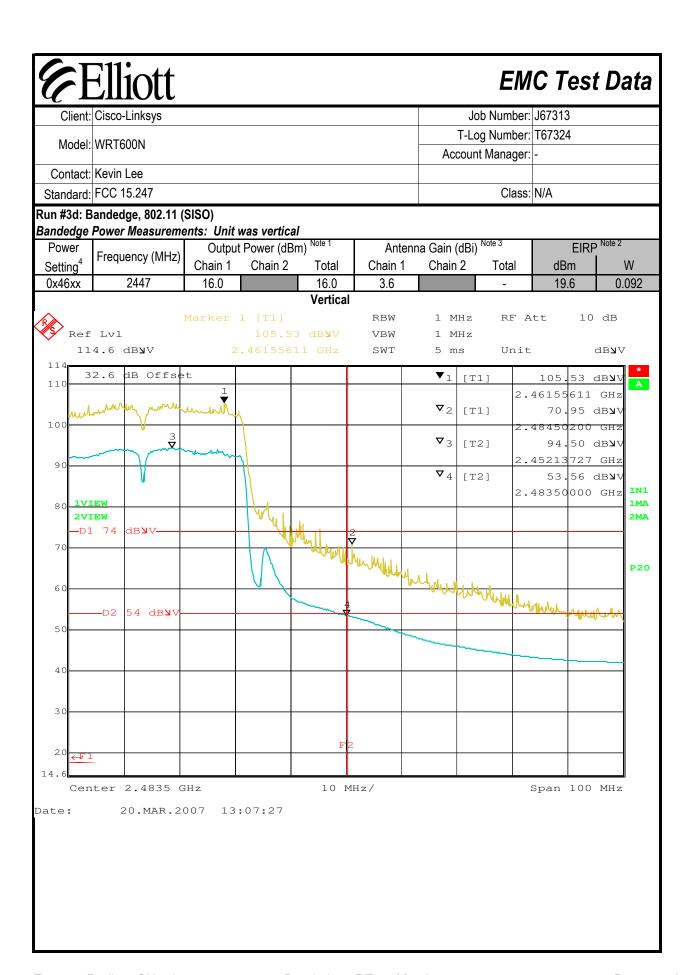
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #3b: Bandedge, 802.11 (SISO) Bandedge Power Measurements: Unit was vertical EIRP Note 2 Output Power (dBm) Note 1 Power Antenna Gain (dBi) Note 3 Frequency (MHz) Chain 1 Chain 2 Chain 1 Chain 2 W Setting⁴ Total Total dBm 0x41xx 2427 16.5 16.5 3.6 20.1 0.103 Vertical RF Att RBW 1 MHz 10 dB Ref Lvl 107.98 dB**y**V VBW 1 MHz 114.6 dB**y**V SWT 5 ms Unit db**y**v 114 32.6 dB Offset \blacktriangledown_1 107.98 dB [T4] 110 2.41454910 GHz [T1] 100 **∀**⅓ [T2] 3.84 dB [T2] 2.39000000 GHz IN1 1MA of 53 means of 50 miles of 50 2MA 2VIEW -D1 74 P20 60 40 30 Center 2.39 GHz 10 MHz/ Span 100 MHz 20.MAR.2007 11:10:38 Date:

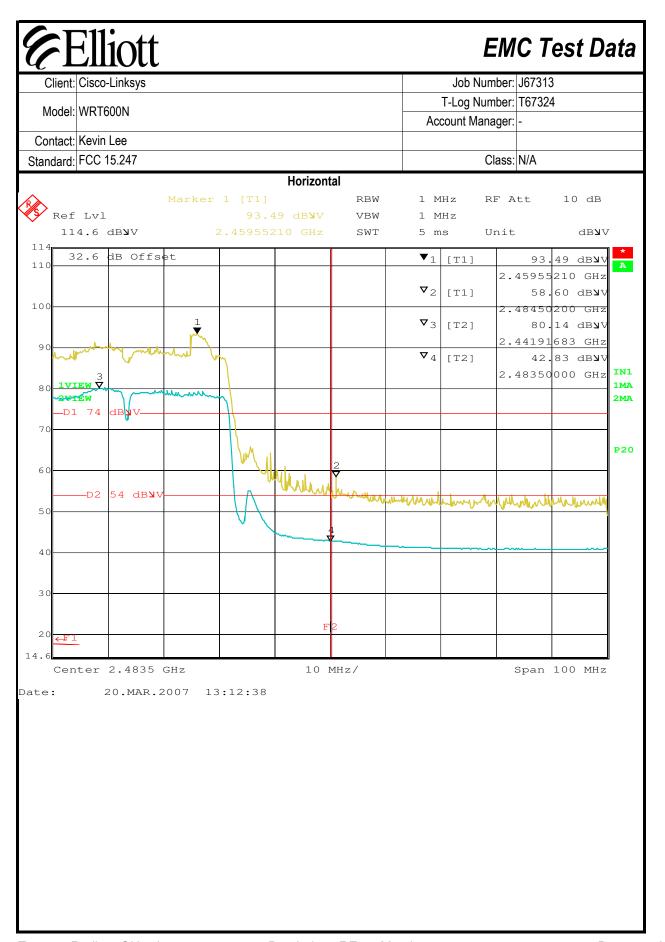


EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #3c: Bandedge, 802.11 (SISO) Bandedge Power Measurements: Unit was vertical EIRP Note 2 Antenna Gain (dBi) Note 3 Power Output Power (dBm) Frequency (MHz) Setting⁴ Chain 1 Chain 2 Total Chain 1 Chain 2 Total dBm W 2437 0x3dxx 17.5 17.5 3.6 21.1 0.130 Low Vertical RF Att RBW 1 MHz 10 dB Ref Lvl 109.96 dB**y**V VBW 1 MHz 114.6 dB**y**V SWT 5 ms Unit dB**y**V 114 32.6 dB Offset \blacktriangledown_1 109¹96 db [T1] 110 2.4295<mark>7</mark>9**1**6 GH2 ∇_2 [T1] 64 dB 100 **v**₃ [T2] 43178357 ∇_4 [T2] 53.32 dB 2.39000000 GHz IN1 Elevery 10 months of the second of the secon 1MA 2VIEW 2MA -D1 74 P20 60 40 30 20 Center 2.39 GHz 10 MHz/ Span 100 MHz 20.MAR.2007 12:56:09 Date:

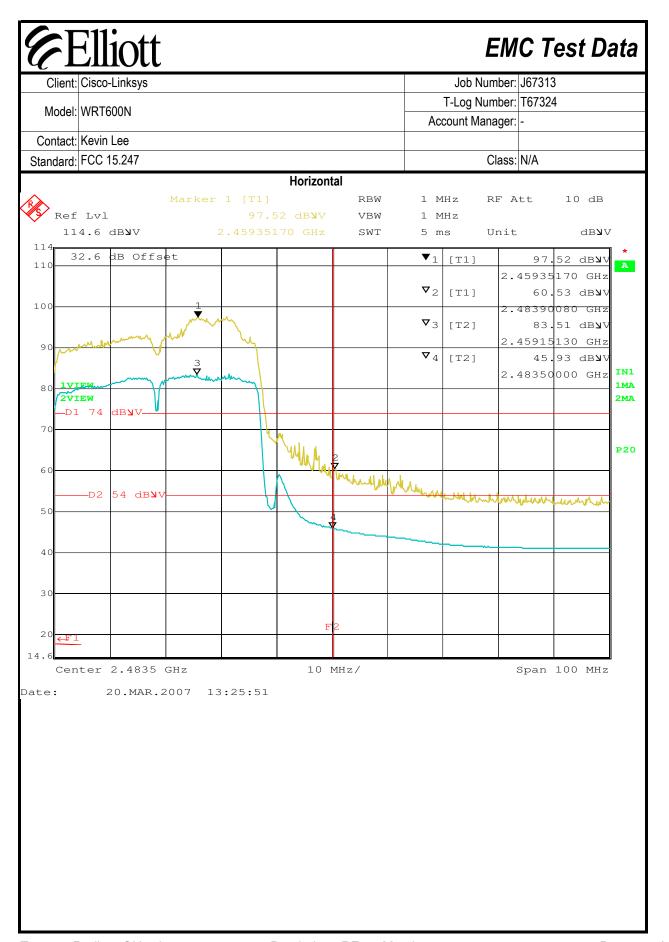
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A **High Vertical** RBW 10 dB 1 MHz RF Att Ref Lvl 108.25 dB**y**V VBW 1 MHz 114.6 dB**y**V SWT 5 ms Unit dB**y**V 32.6 dB Offset \blacktriangledown_1 [T1] 108.25 dB**y**V 110 2.44592485 GHz [T1] 68.56 dB**y**7 100 **v**₃ [T2] 95.66 dB**y**7 2.44151603 GHz 53.60 dB**y** [T2] Manual 2 2.48350000 GHz IN1 1MA 2VIEW 2MA _D1 74 dB**y**V-P20 54 dB**y**v 50 40 30 10 MHz/ Span 100 MHz Center 2.4835 GHz Date: 20.MAR.2007 12:46:43



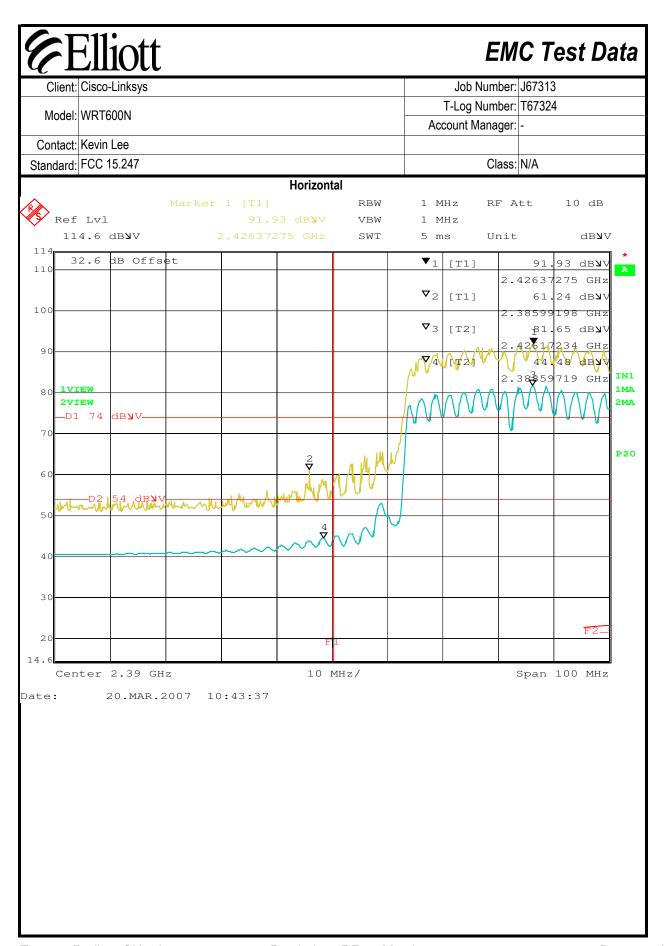




EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #3e: Bandedge, 802.11 (SISO) Bandedge Power Measurements: Unit was vertical Antenna Gain (dBi) Note 3 EIRP Note 2 Power Output Power (dBm) Frequency (MHz) Setting⁴ Chain 1 Chain 2 Total Chain 1 Chain 2 Total dBm W 2452 0x48xx 15.5 15.5 3.6 19.2 0.082 Vertical RBW 1 MHz RF Att 10 dB Ref Lvl 103.95 dB**y**V VBW 1 MHz 114.6 dB**y**V SWT 5 ms Unit dByv 114 dB Offset 32.6 **▼**2| [T1] 103.95 dB 11 2.44592485 GHz **v**₃ [T2] 93.39 dB**y**7 100 $\nabla_4|_{[T2]}$ 53.80 dB**y**7 .48350000 GHz IN1 1MA 2VIEW 2MA dB**y**vmortal Market Ma P20 54 dB**y**\ 50 40 30 Center 2.4835 GHz 10 MHz/ Span 100 MHz Date: 20.MAR.2007 13:38:00

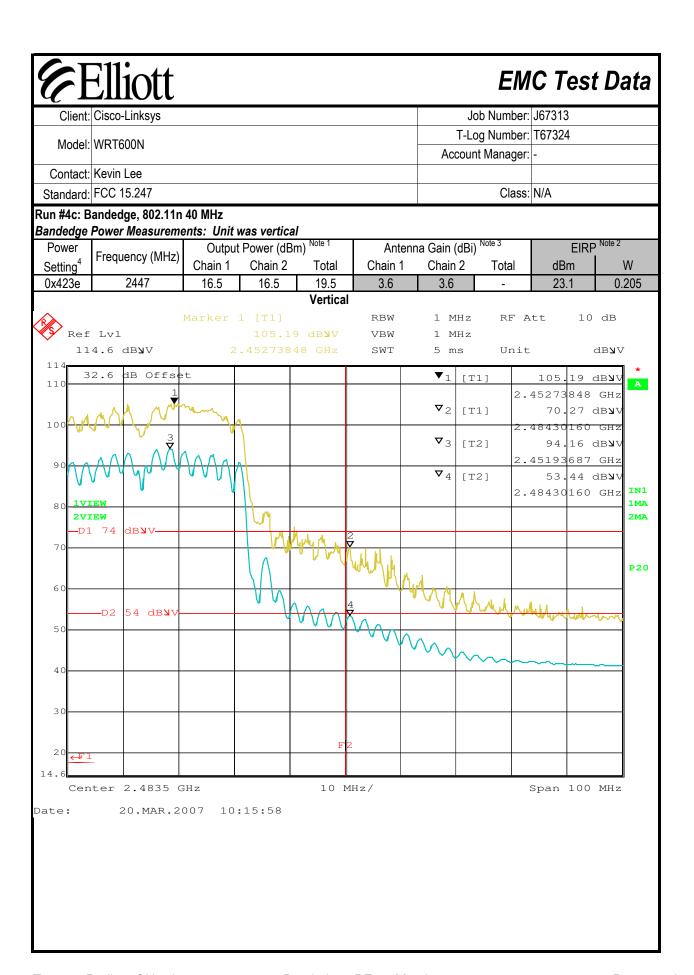


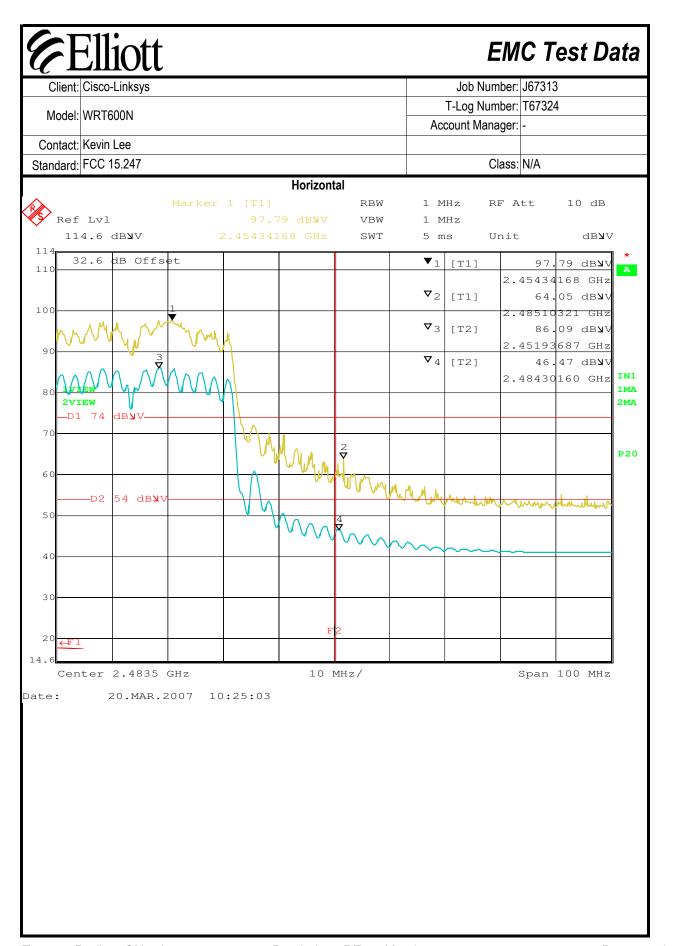
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #4a: Bandedge, 802.11n 40 MHz Bandedge Power Measurements: Unit was vertical Antenna Gain (dBi) Note 3 EIRP Note 2 Output Power (dBm) Power Frequency (MHz) Setting⁴ Chain 1 Chain 2 Total Chain 1 Chain 2 Total dBm W 2422 0x3F3D 16.0 16.4 19.2 3.6 3.6 22.8 0.191 Vertical RBW 1 MHz RF Att 10 dB Ref Lvl 104.97 dB**y**V VBW 1 MHz 114.6 dB**y**V SWT 5 ms Unit dByv 114 32.6 dB Offset [T1] 104.97 dB 110 2.42<u>4</u>97 395 GH2 ~[x1\]\/ 100 **v**₃ [T2] 2.38959920 GHz 1MA 2VIEW 2MA dB**y**v-P20 40 2.0 Center 2.39 GHz 10 MHz/ Span 100 MHz Date: 20.MAR.2007 10:34:38

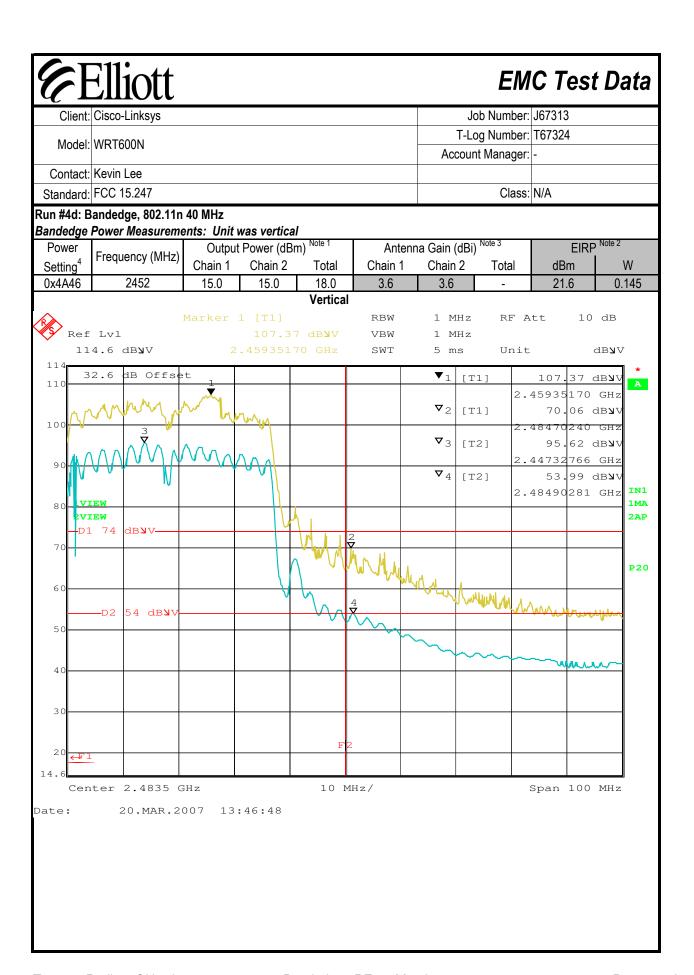


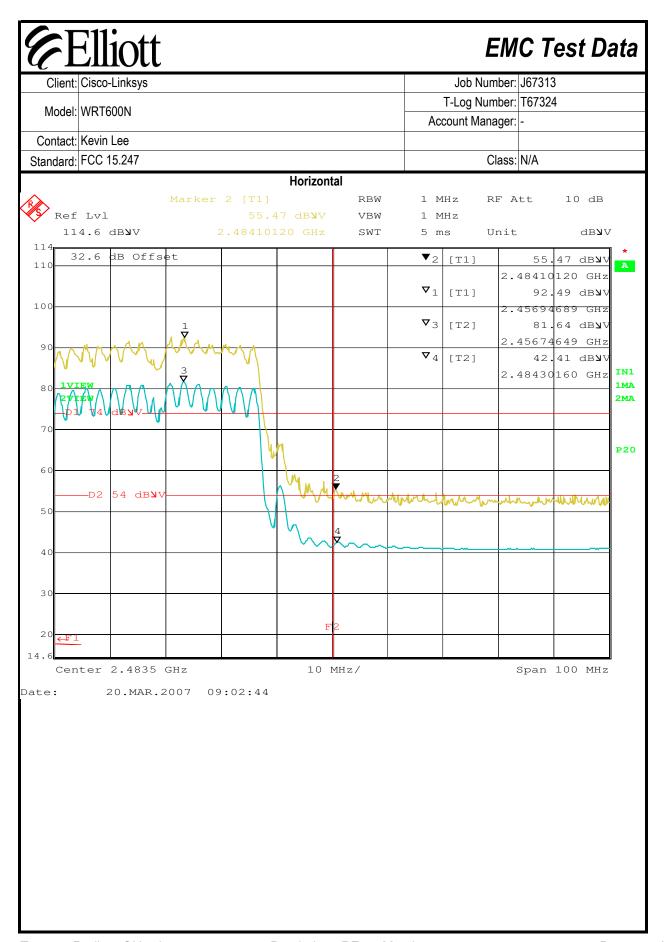
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #4b: Bandedge, 802.11n 40 MHz Bandedge Power Measurements: Unit was vertical EIRP Note 2 Power Output Power (dBm) Antenna Gain (dBi) Note 3 Frequency (MHz) Chain 1 Chain 2 Chain 1 Chain 2 W Setting⁴ Total Total dBm 0x3e3d 2427 16.5 16.5 19.5 3.6 3.6 23.1 0.205 Vertical RBW 1 MHz RF Att 10 dB Ref Lvl 71.55 dB**y**V VBW 1 MHz 114.6 dB**y**V dB**y**V SWT 5 ms Unit dB Offset [T1] 71 55 dB**y** 110 2.38939880 100 [T2] IN1 1MA 2AP dB**y**v-P20 60 40 30 10 MHz/ Span 100 MHz Center 2.39 GHz 20.MAR.2007 10:53:19 Date:

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Horizontal Marker 4 [T2] RBW 1 MHz RF Att 10 dB Ref Lvl 43.73 dB**y**V VBW 10 Hz 114.6 dB**y**V 2.38959920 GHz Unit db**y**v SWT 25 s dB Offset ▼4 [T2] 43.73 dB 2.38959920 GHz **∇**₃ | [T2] 84.33 dB**y**V 100 2.42076152 GHz IN1 2VIEW 2MA -D1 74 dB**y**V-P20 60 54 dB**y**V 40 30 Center 2.39 GHz 10 MHz/ Span 100 MHz Date: 20.MAR.2007 11:01:37

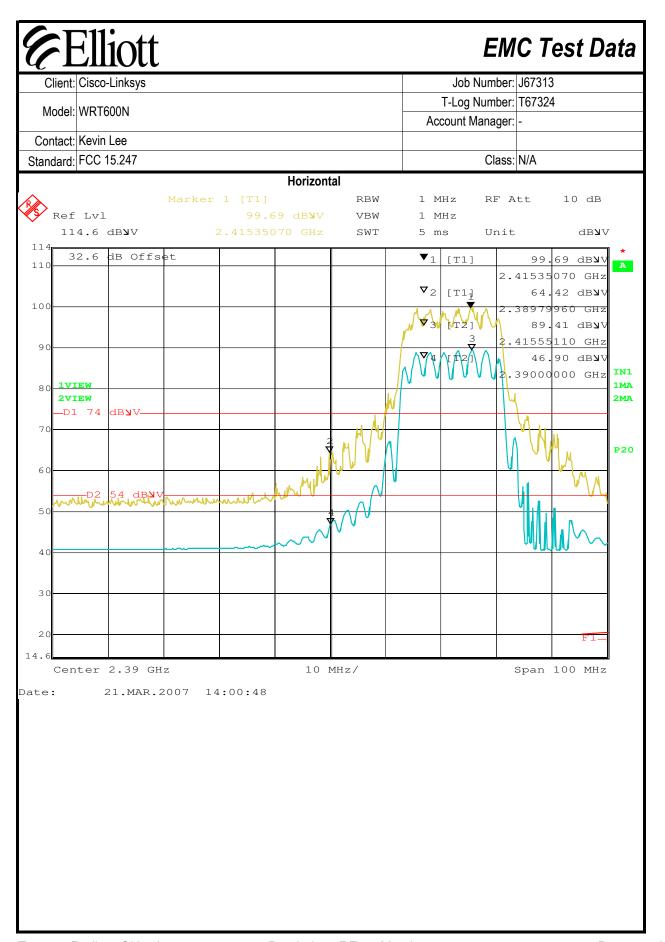


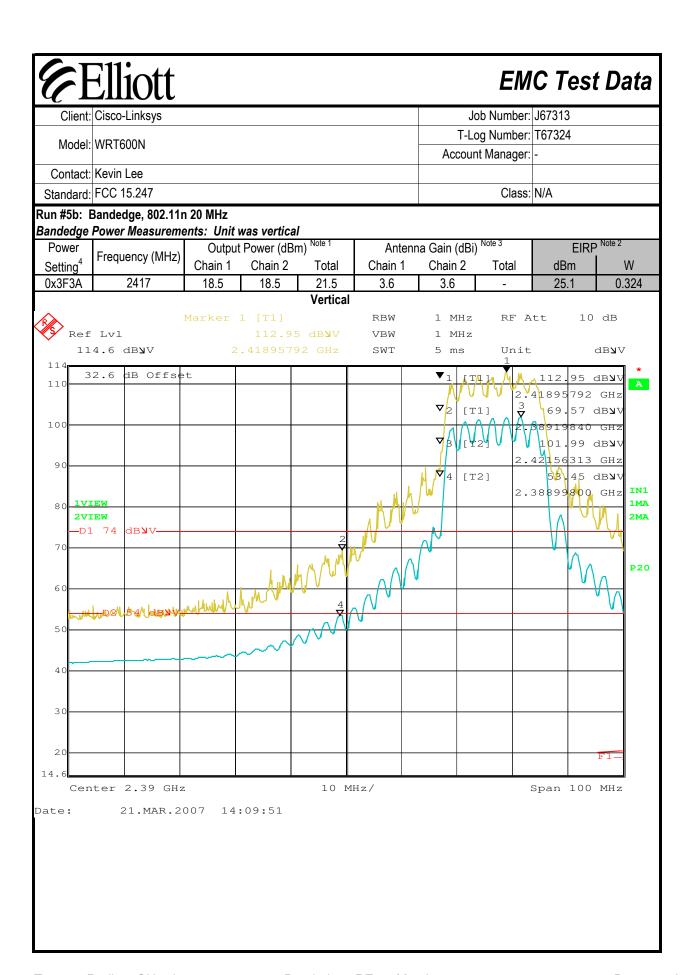


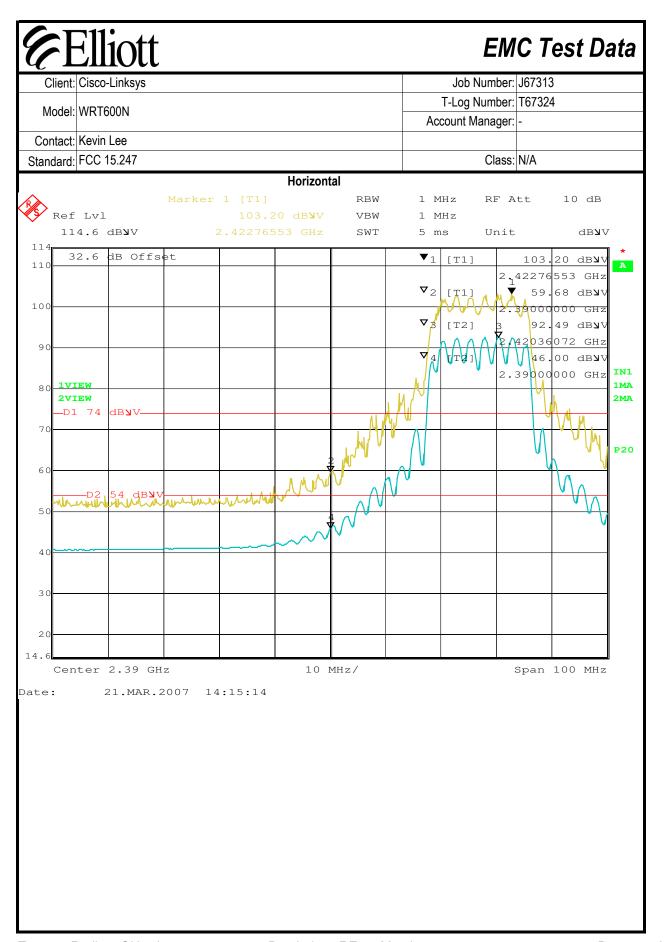




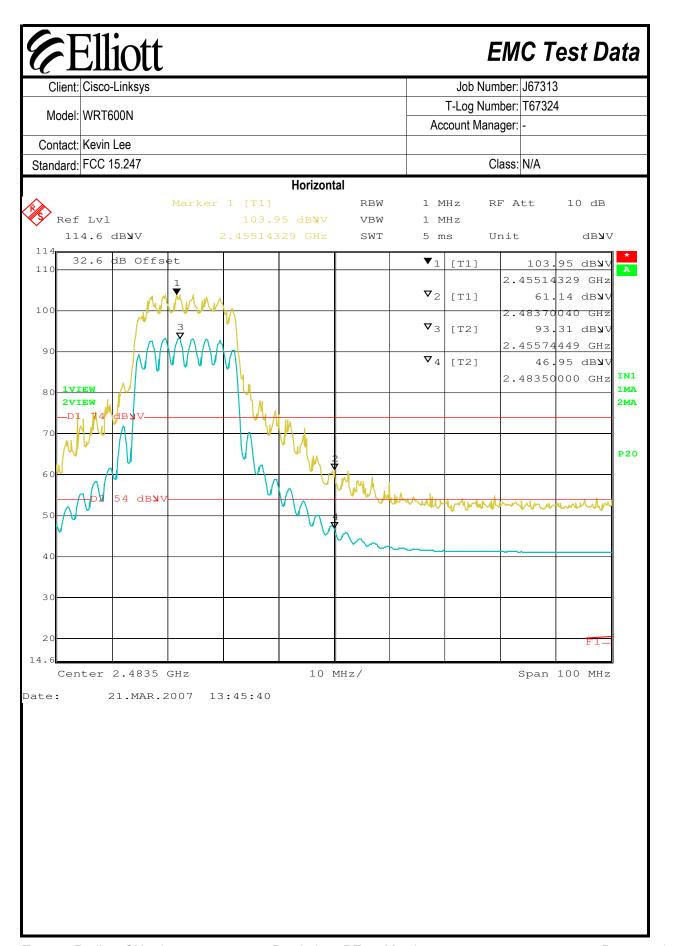
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #5a: Bandedge, 802.11n 20 MHz Bandedge Power Measurements: Unit was vertical EIRP Note 2 Output Power (dBm) Note 1 Power Antenna Gain (dBi) Note 3 Frequency (MHz) Chain 1 Chain 2 Chain 1 Chain 2 W Setting⁴ Total Total dBm 0x433E 2412 17.0 17.0 20.0 3.6 3.6 23.6 0.230 Vertical RF Att RBW 1 MHz 10 dB 111.07 dB**y**V Ref Lvl VBW 1 MHz 114.6 dB**y**V SWT Unit dB**y**V 5 ms dB Offset 111. 07 dB**y**v 110 2.41334669 GHz [T1] 70.93 dB 100 GH [T2] 53.92 dB IN1 8859 719 GHz 1MA 2MA dB**y**v-Market Market P20 60 40 30 10 MHz/ Span 100 MHz Center 2.39 GHz 21.MAR.2007 13:56:06 Date:



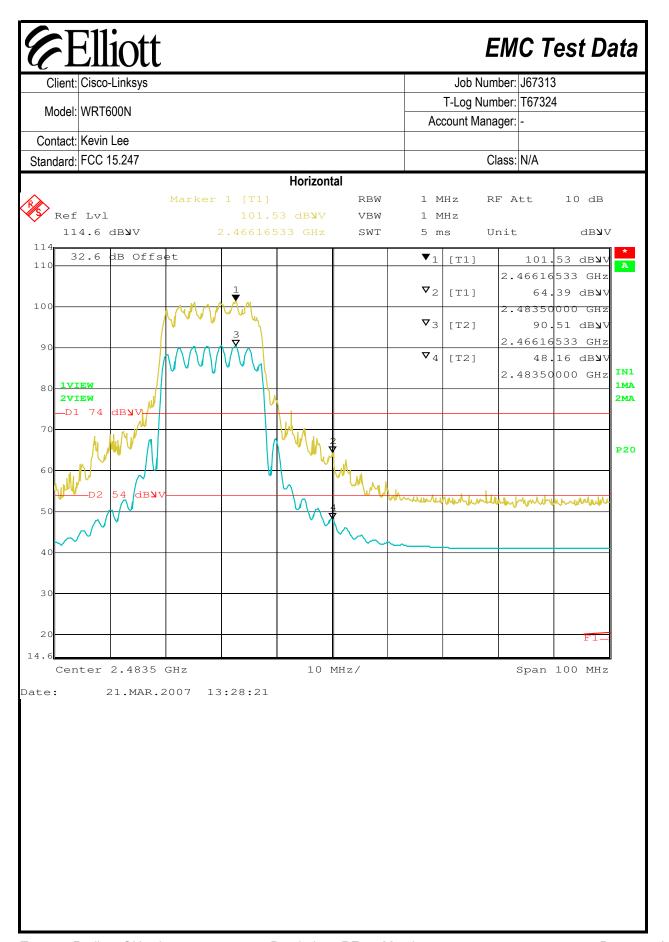




EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #5c: Bandedge, 802.11n 20 MHz Bandedge Power Measurements: Unit was vertical Output Power (dBm) Note 1 EIRP Note 2 Power Antenna Gain (dBi) Note 3 Frequency (MHz) Chain 1 Chain 2 Chain 1 Chain 2 dBm W Setting⁴ Total Total 0x433E 2457 18.5 18.5 21.5 3.6 3.6 25.1 0.324 Vertical RBW 1 MHz RF Att 10 dB 109.89 dB**y**V Ref Lvl VBW 1 MHz 114.6 db**y**V SWT dB**y**V 5 ms Unit \blacktriangledown_1 [T1] 109.89 dB 110 2.45313928 GHz ∇_2 [T1] 67.39 dB 100 **v**₃ [T2] 46616533 GH ∇_4 [T2] 52.93 dB IN1 2.48350000 GHz 2MA P20 50 40 30 10 MHz/ Span 100 MHz Center 2.4835 GHz 21.MAR.2007 13:41:00 Date:



EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #5c: Bandedge, 802.11n 20 MHz Bandedge Power Measurements: Unit was vertical Output Power (dBm) Note 1 EIRP Note 2 Power Antenna Gain (dBi) Note 3 Frequency (MHz) Chain 1 Chain 2 Chain 1 Chain 2 dBm W Setting⁴ Total Total 0x4C4C 2462 16.5 16.5 19.5 3.6 3.6 23.1 0.205 Vertical RBW 1 MHz RF Att 10 dB 107.61 dB**y**V Ref Lvl VBW 1 MHz 114.6 db**y**V SWT dB**y**V Unit 5 ms dB Offset \blacktriangledown_1 [T1] 107.61 dB 110 2.45694689 GHz ∇_2 [T1] 71.49 dB 100 2.48350<mark>000 GH</mark>2 **v**₃ [T2] 76 dB**y** 45694689 GHz ∇_4 [T2] 53.33 dB IN1 2.48410120 GHz 2MA P20 40 30 10 MHz/ Span 100 MHz Center 2.4835 GHz 21.MAR.2007 13:15:41 Date:



EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Model:	WRT600N	T-Log Number:	T67324
		Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, Bandwidth and Spurious Emissions (802.11b)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

specification listed above.

Date of Test: 3/20/2007 Config. Used: 1

Test Engineer: Juan Martinez Config Change: None

Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 18 °C

Rel. Humidity: 37 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	20.3 dBm
2	Power spectral Density (PSD)	15.247(d)	Pass	6.5 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	10.2 MHz
3	99% Bandwidth	RSS GEN	-	13.7 MHz
4	Spurious emissions	15.247(b)	Pass	Refer to plots

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Test Data Client: Cisco-Linksys Job Number: J67313 T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1: Output Power **ESIB** Power measurement table EIRP Note 2 Output Power Output Power Antenna Power Frequency (MHz) Result (dBm) ³ (dBm) ¹ Gain (dBi) Setting² mW dBmW 2412 0x40xx 20.3 23.9 0.245 107.2 3.6 Pass 2437 0.226 20.0 0x4545 98.9 3.6 **Pass** 23.6

95.5

Note 1:	RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the ESI analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 30 MHz The output power limit is 30dBm
Note 2:	Power setting - the software power setting used during testing, included for reference only.

Pass

23.4

0.219

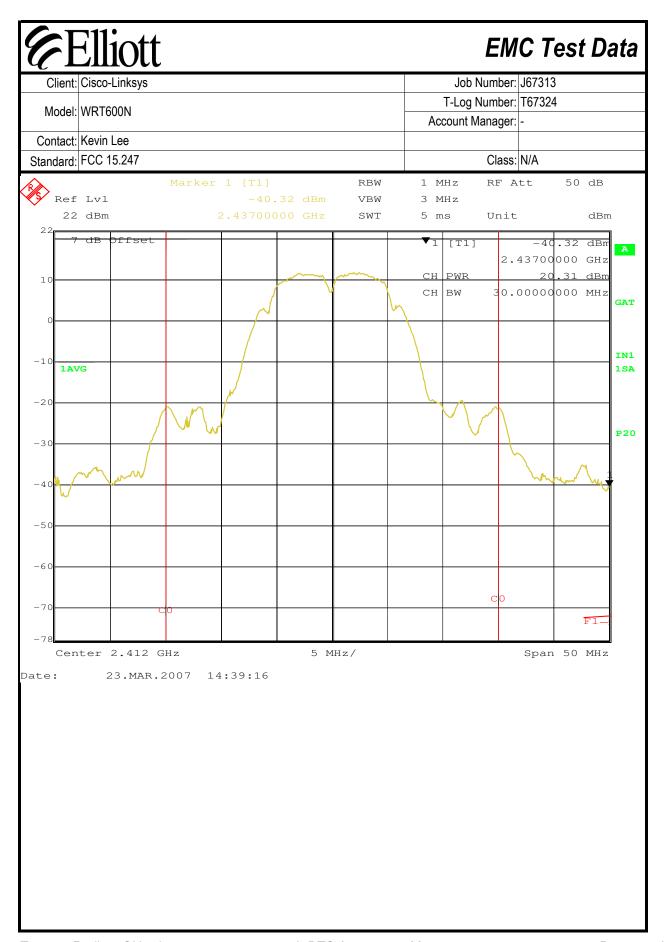
3.6

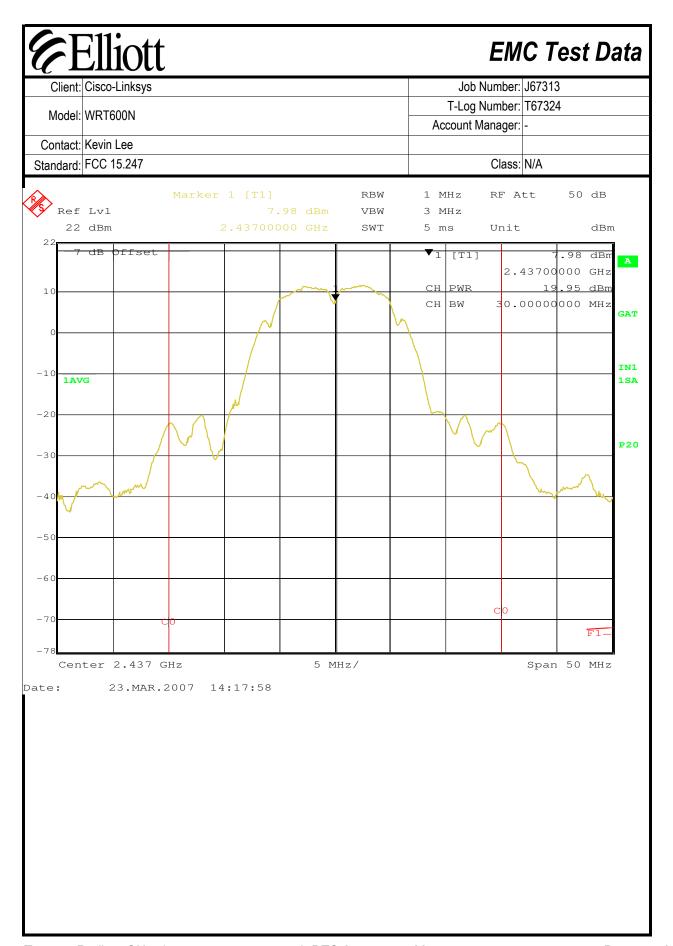
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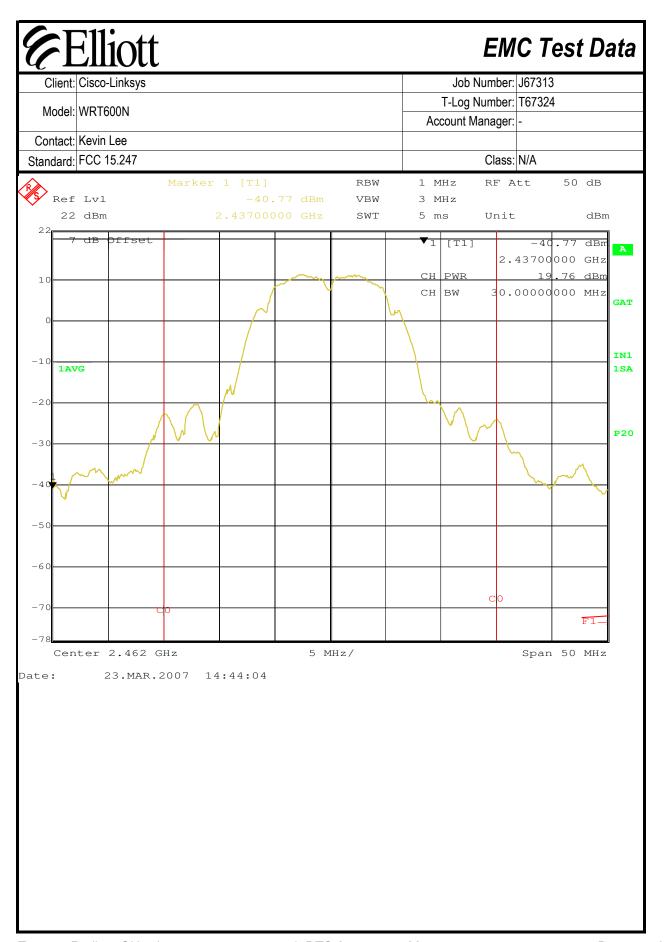
2462

19.8

 mW









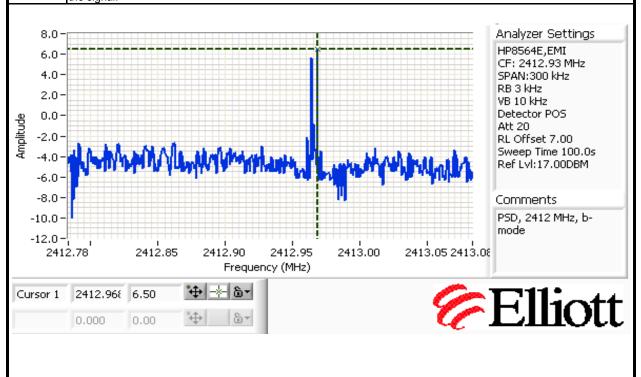
Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
wodei.	WRIOUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

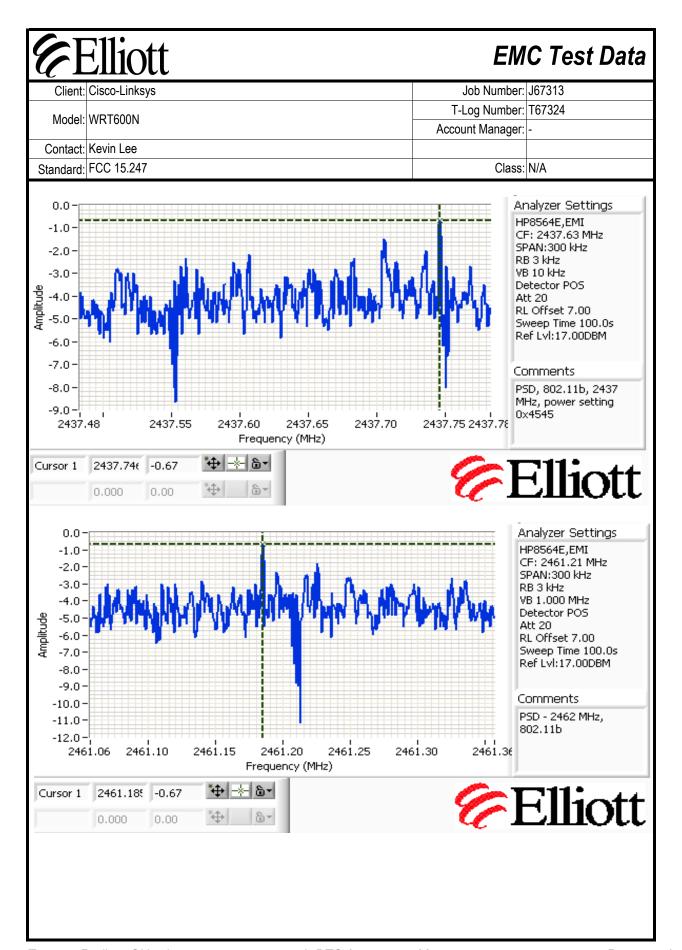
Run #2: Power spectral Density

Power	Frequency (MHz)	PSD	Limit	Result
Setting	riequency (Mi 12)	(dBm/3kHz) Note 1	dBm/3kHz	
0x40xx	2412	6.5	8.0	Pass
0x4545	2437	-0.7	8.0	Pass
0x47xx	2462	-0.7	8.0	Pass

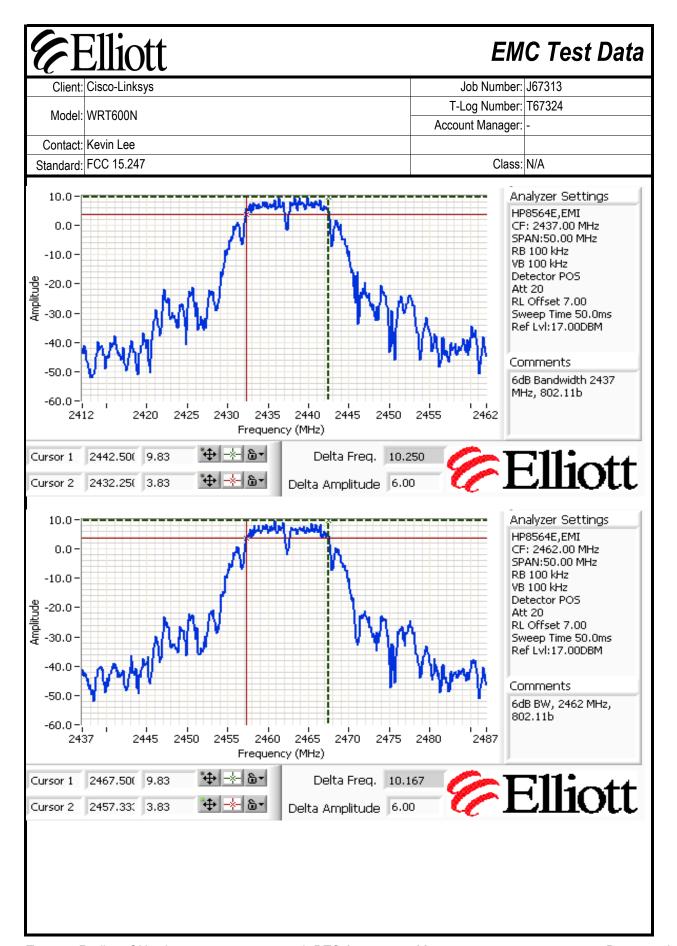
Note 1:

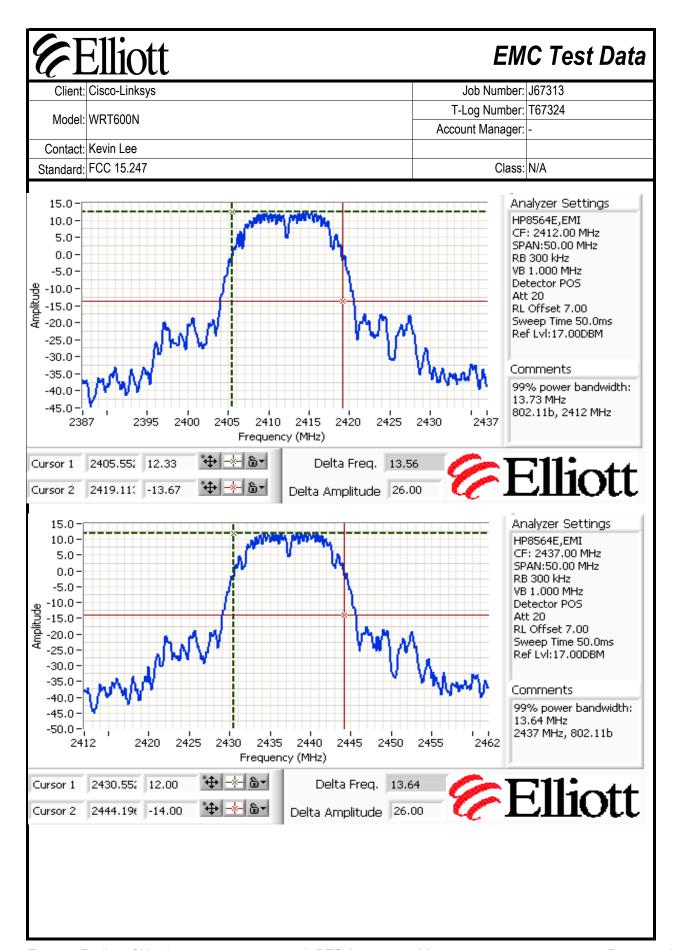
Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.

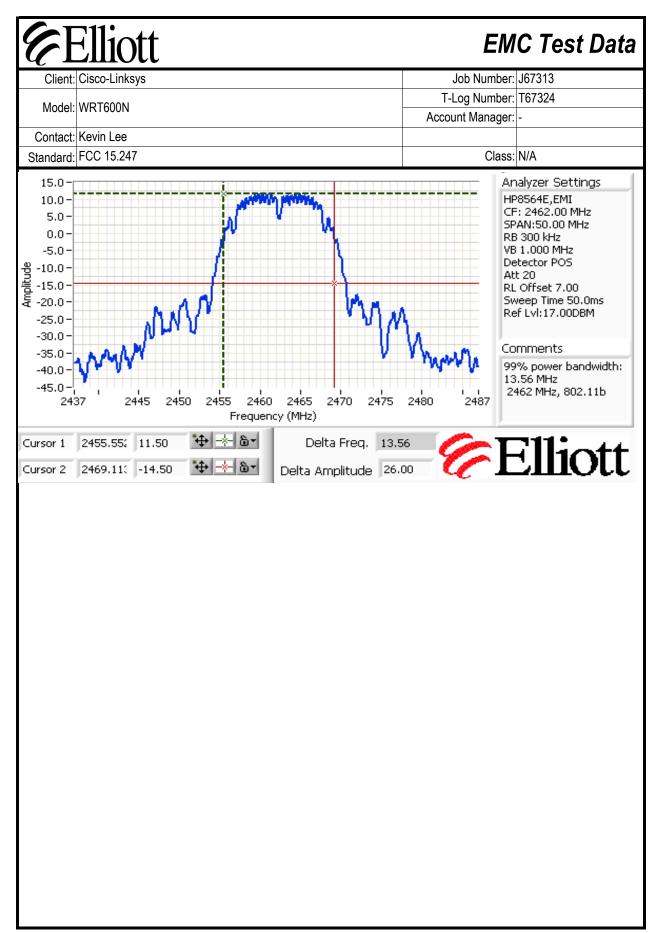




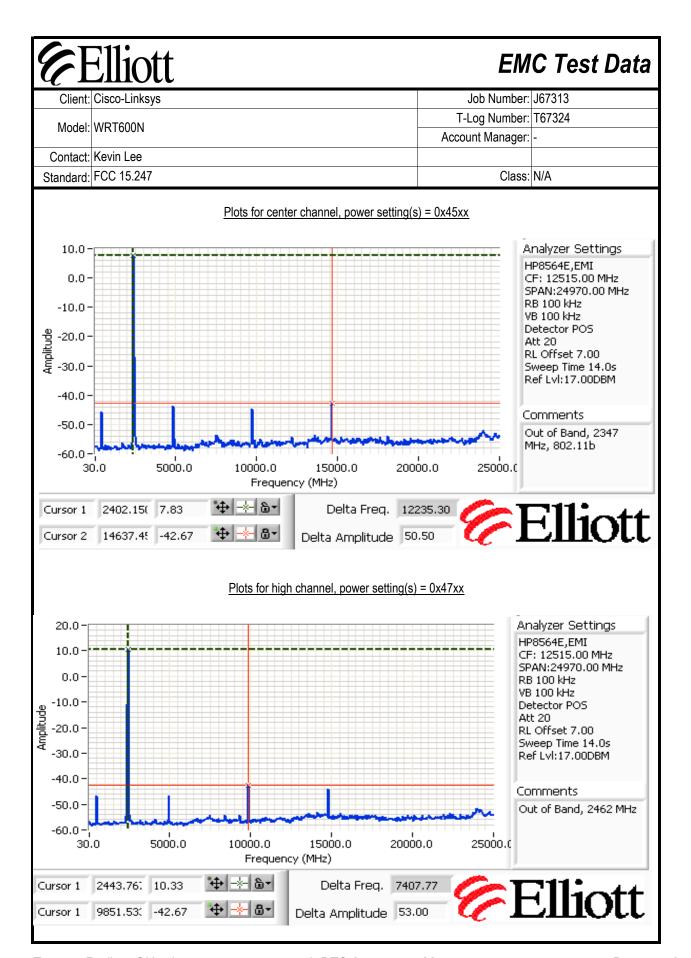
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #3: Signal Bandwidth Power Resolution Bandwidth (MHz) Frequency (MHz) Settina Bandwidth 6dB 99% 2412 0x40xx 100kHz 10.2 13.7 0x45xx 2437 100kHz 10.25 13.6 2462 0x47xx 100kHz 10.2 13.6 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB Note 1: 20.0 Analyzer Settings HP8564E,EMI 10.0 CF: 2412.00 MHz SPAN:50.00 MHz 0.0 RB 100 kHz VB 100 kHz -10.0 Detector POS Amplitude Att 20 -20.0 RL Offset 7.00 Sweep Time 50.0ms -30.0 Ref Lvl:17.00DBM Comments -50.0 6dB Bandwidth, 2412 MHz, 802.11b -60.0 2410 2415 2420 2405 2400 2387 Frequency (MHz) Cursor 1 2417.41; 10.83 **⊕** -×- 6-Delta Freq. 10.167 Cursor 2 2407.250 4.83 Delta Amplitude 6.00







EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #4: Out of Band Spurious Emissions Frequency (MHz) Result Limit -52 dBc @ 14.512 2412 -30dBc GHz -42.7 dBc @ 14.637 2437 -30dBc GHz -42.7 dBc @ 9.851 2462 -30dBc GHz Plots for low channel, power setting(s) = 0x40xxAnalyzer Settings 20.0 HP8564E,EMI 10.0 CF: 12515.00 MHz SPAN:24970.00 MHz 0.0 RB 100 kHz VB 100 kHz -10.0 Detector POS -20.0-Att 20 RL Offset 7.00 Sweep Time 14.0s -30.0 Ref Lvl:17.00DBM -40.0 Comments -50.0 Out of Band, 2412 MHz, 802.11b -60.0 5000.0 10000.0 15000.0 20000.0 25000.0 30.0 Frequency (MHz) 2402.15(10.00 # 1 - ≥ 1 6 - 1 Delta Freq. 12110.45 Cursor 1 Cursor 2 14512.6(-42.00 Delta Amplitude 52.00



•			
Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
wodei.	WKTOOON	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, Bandwidth and Spurious Emissions (802.11g Legacy)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

specification listed above.

Date of Test: 3/20/2007 Config. Used: 1

Test Engineer: Juan Martinez Config Change: None

Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 18 °C

Rel. Humidity: 37 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	19.6 dBm
2	Power spectral Density (PSD)	15.247(d)	Pass	-0.4dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	16.6 MHz
3	99% Bandwidth	RSS GEN	-	17.8 MHz
4	Spurious emissions	15.247(b)	Pass	Refer to plots

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1: Output Power **ESIB** Power measurement table EIRP Note 2 Output Power Output Power Power Antenna Frequency (MHz) Result (dBm) 1 (dBm)³ Setting² mWGain (dBi) dBm W 2412 Pass 0.195 0x3Axx 19.3 85.1 3.6 22.9 2437 0x3Cxx 19.6 91.2 3.6 **Pass** 23.2 0.209 0x44xx 2462 18.6 72.4 3.6 Pass 22.2 0.166 RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the ESI analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was Note 1: transmitting) and power integration over 50 MHz Power setting - the software power setting used during testing, included for reference only. Note 2: RF Att 30 dB RBW 1 MHz Ref Lvl VBW 3 MHz 16 dBm SWT Unit dBm 7 dB Offset A GAT -10IN1 1SA 1AVG -20 -30 -40-60

Center 2.412 GHz

26.MAR.2007 07:14:13

-70

-80

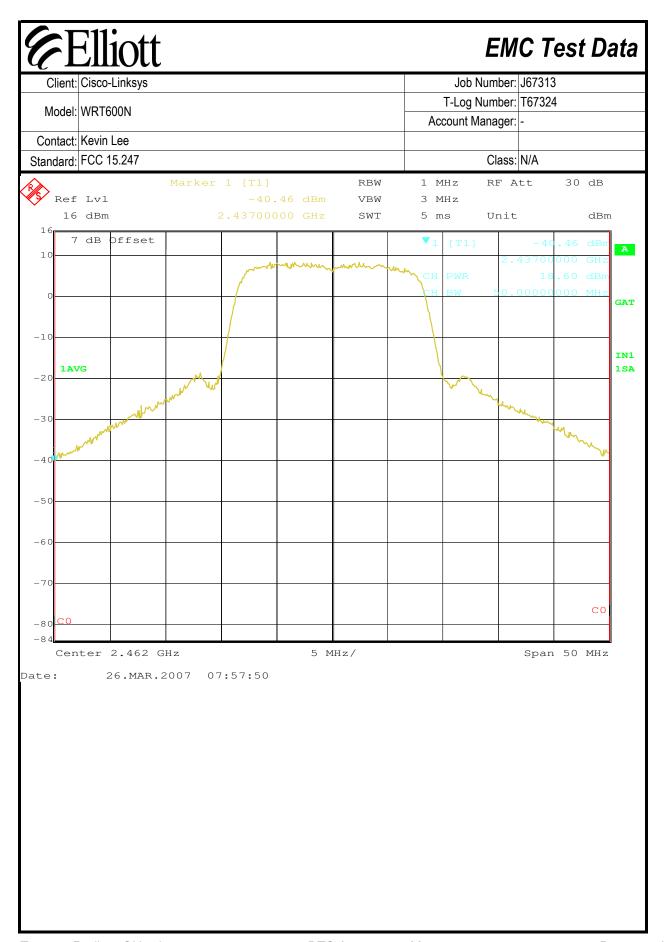
Date:

5 MHz/

CO

Span 50 MHz







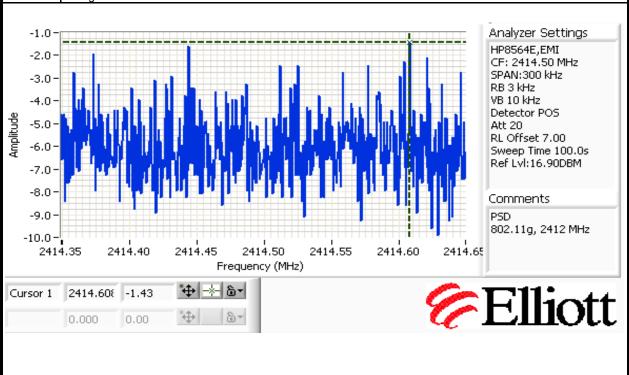
Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
wodei.	WRIOUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

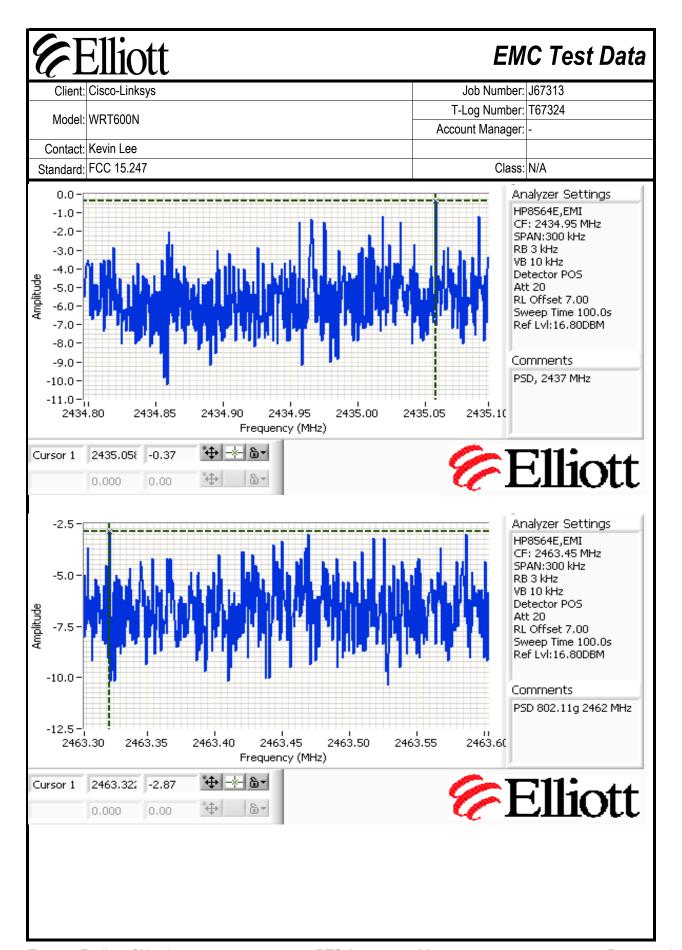
Run #2: Power spectral Density

Power	Frequency (MHz)	PSD	Limit	Result
Setting	riequency (Mi 12)	(dBm/3kHz) Note 1	dBm/3kHz	
0x3Axx	2412	-1.4	8.0	Pass
0X3Cxx	2437	-0.4	8.0	Pass
0x44xx	2462	-2.9	8.0	Pass

Note 1:

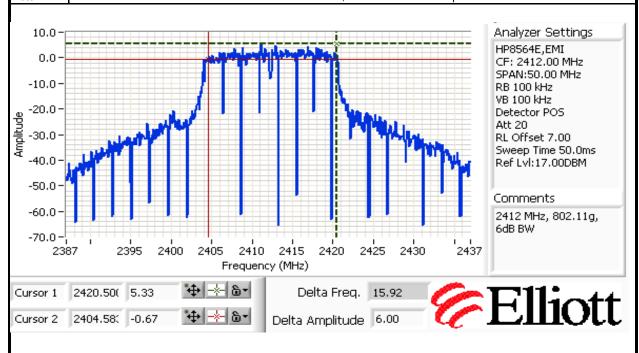
Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.

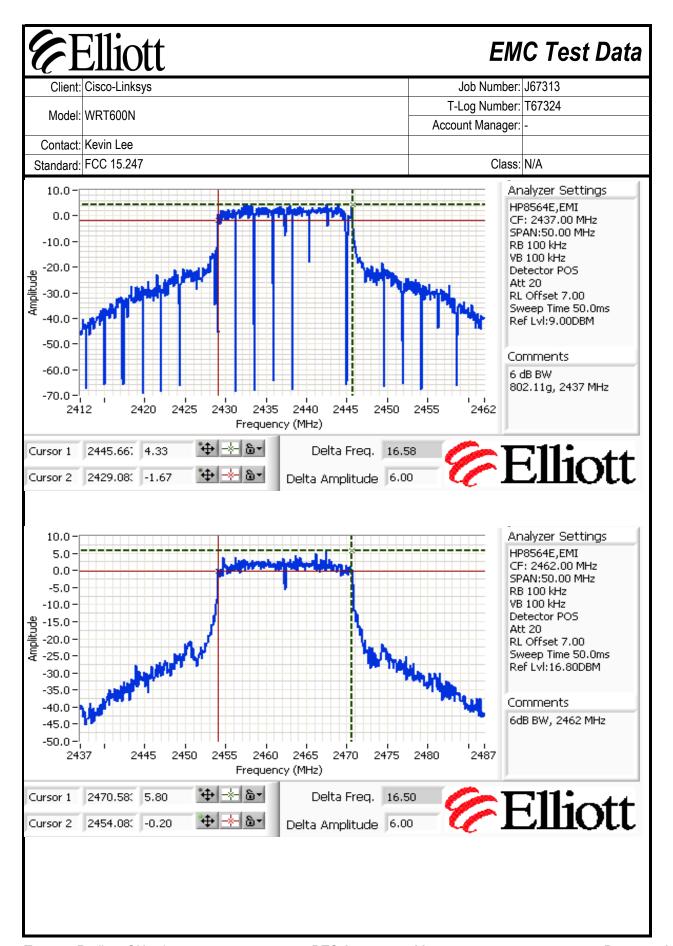


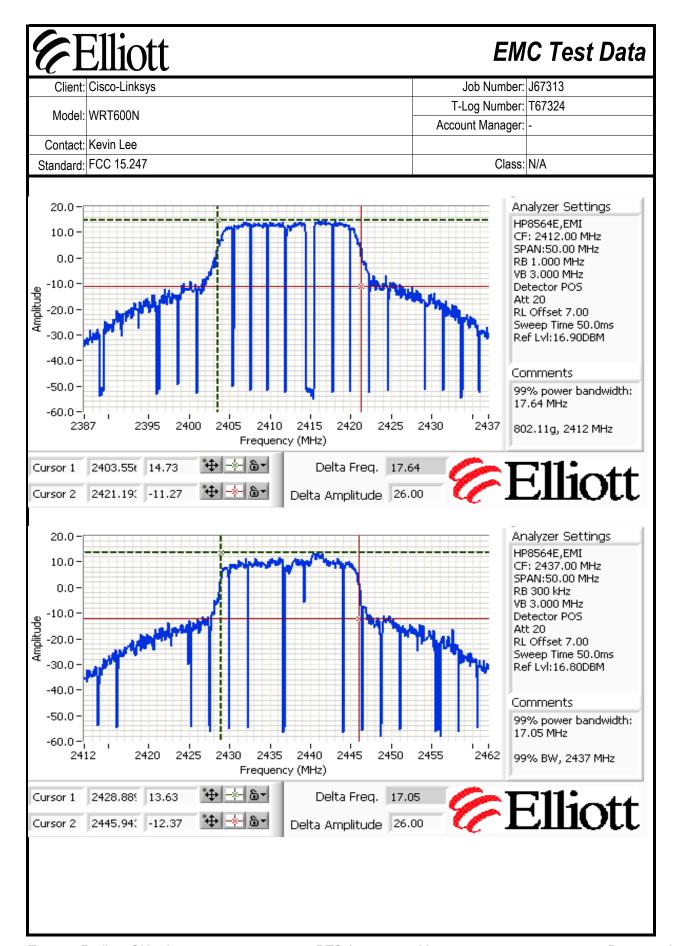


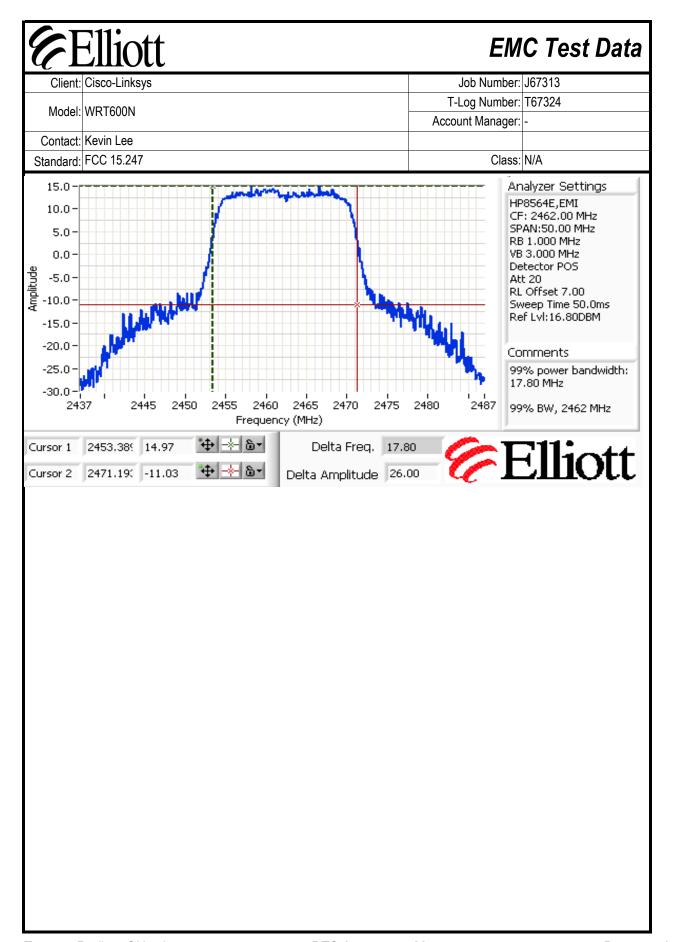
Power	Eroguenov (MUz)	Resolution	Bandwi	dth (MHz)
Setting	Frequency (MHz)	Bandwidth	6dB	99%
0x3a00	2412	100kHz	15.9	17.6
0x3Cxx	2437	100kHz	16.6	17.1
0x44xx	2462	100kHz	16.5	17.8

Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB

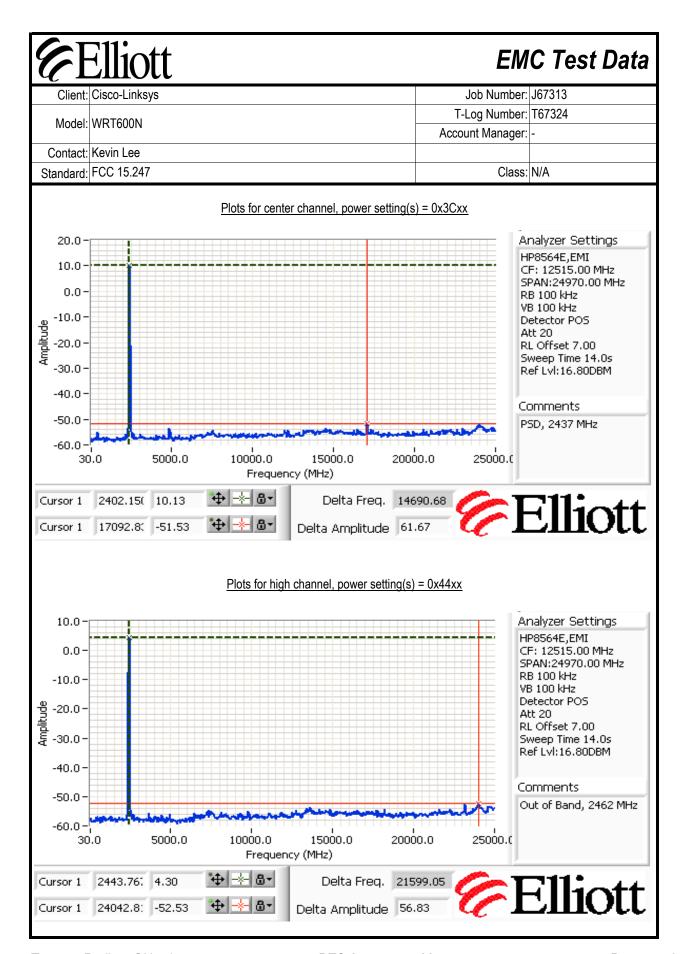








EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #4: Out of Band Spurious Emissions Frequency (MHz) Result Limit -53.2 dBc @ 14.512 2412 -30dBc GHz -61.7dBc @ 14.690 2437 -30dBc GHz -56.8 dBc @ 21.599 2462 -30dBc GHz Plots for low channel, power setting(s) = 0x3Axx10.0 Analyzer Settings HP8564E,EMI 0.0 CF: 12515.00 MHz SPAN:24970.00 MHz RB 100 kHz -10.0 -VB 100 kHz Detector POS -30.0 Att 20 RL Offset 7.00 Sweep Time 14.0s Ref Lvl:16.90DBM -40.0 Comments -50.0 Out of Band -60.0 802.11g, 2412 MHz 10000.0 20000.0 5000.0 15000.0 25000.0 30.0 Frequency (MHz) Cursor 1 2402.15(4.40 **♦** - * 6 • Delta Freq. 12110.45 Cursor 1 14512.6(-48.77 Delta Amplitude 53.17



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Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
Model.	VVR 1000IN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, Bandwidth and Spurious Emissions, (SISO 40 MHz, 2.4GHz)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

specification listed above.

Date of Test: 3/20/2007 Config. Used: 1

Test Engineer: Juan Martinez Config Change: None

Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 18 °C

Rel. Humidity: 37 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	18.9 dBm
2	Power spectral Density (PSD)	15.247(d)	Pass	4.1 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	36.8 MHz
3	99% Bandwidth	RSS GEN	-	36.9 MHz
4	Spurious emissions	15.247(b)	Pass	Refer to plots

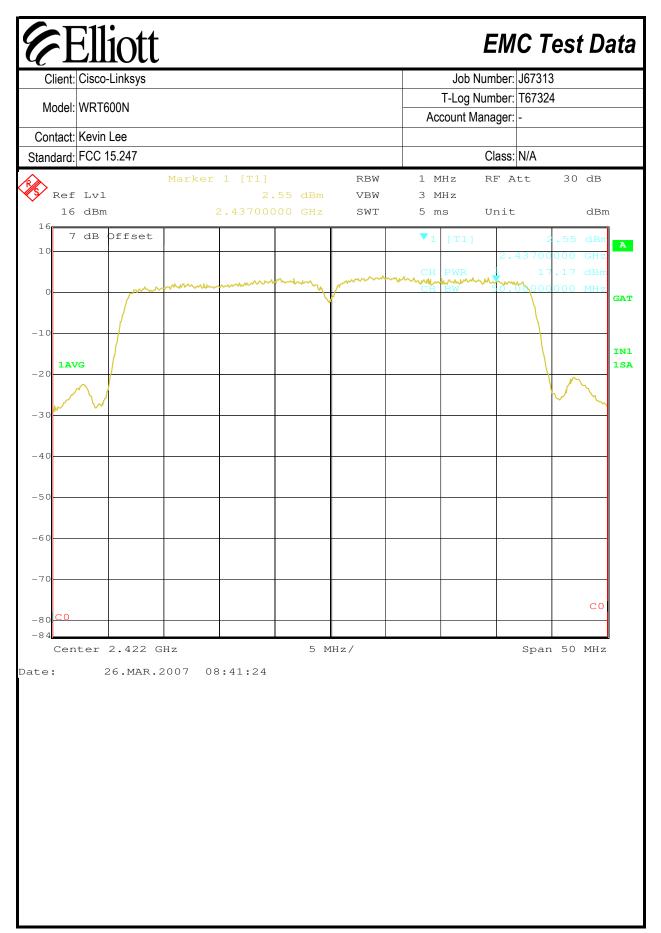
Modifications Made During Testing:

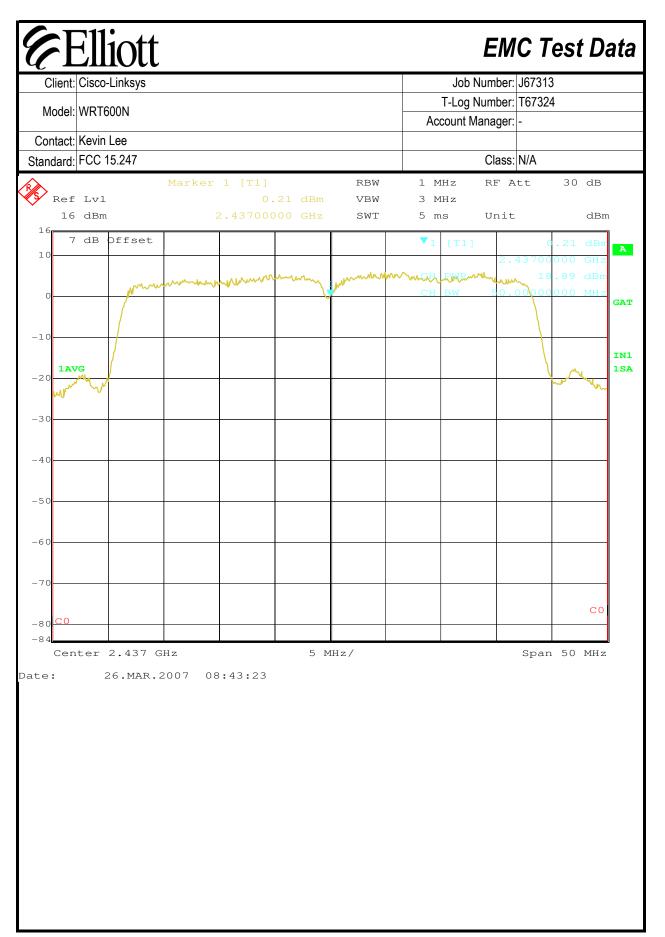
No modifications were made to the EUT during testing

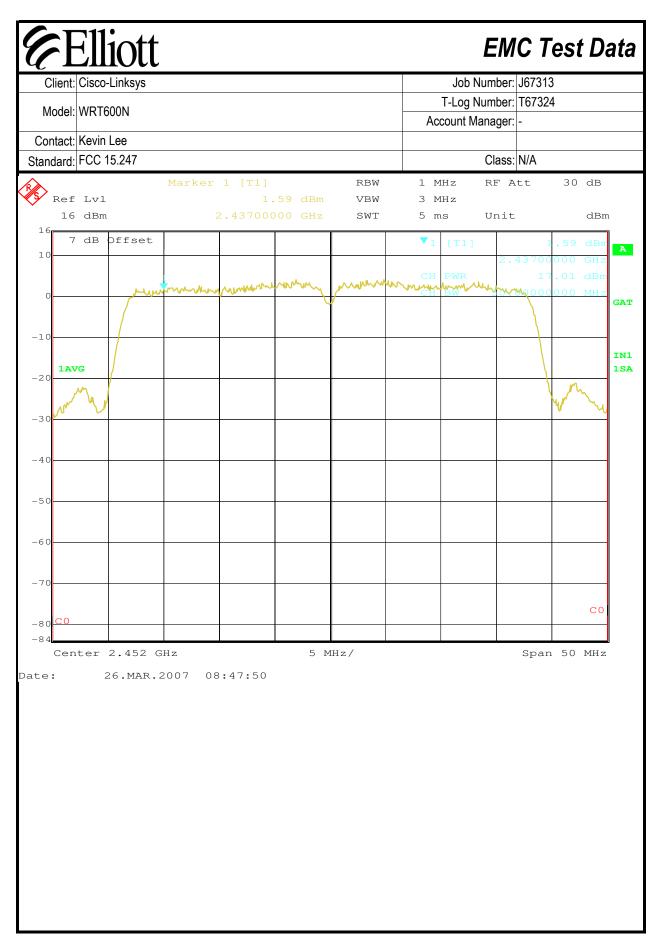
Deviations From The Standard

No deviations were made from the requirements of the standard.

	Elliott					1.		C Tes	Dut
Client:	Cisco-Linksys						ob Number: og Number:		
Model:	WRT600N						nt Manager:		
Contact:	Kevin Lee					7.0000			
Standard:	FCC 15.247						Class:	N/A	
	utput Power								
SI Power Power	Measurements	Output	: Power (dBr	n) Note 1	Antonr	na Gain (dBi)	Note 3	EIDE	Note 2
Setting ⁴	Frequency (MHz)	Chain 1	Chain 2	Total	Chain 1	Chain (dbi)	Total	dBm	l w
0x43xx	2422	17.2	Ondin 2	17.2	3.6	Onam Z	Total	20.8	0.120
0x3dxx	2437	18.9		18.9	3.6			22.5	0.179
0x47xx	2452	17.0		17.0	3.6			20.6	0.110
	transmitting) and p Power setting - the	ower integr		0 MHz	g testing, inclu	uded for refe	rence only.		
Note 1:	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		
	transmitting) and p	ower integr	ation over 50	0 MHz	g testing, inclu	uded for refe	rence only.		









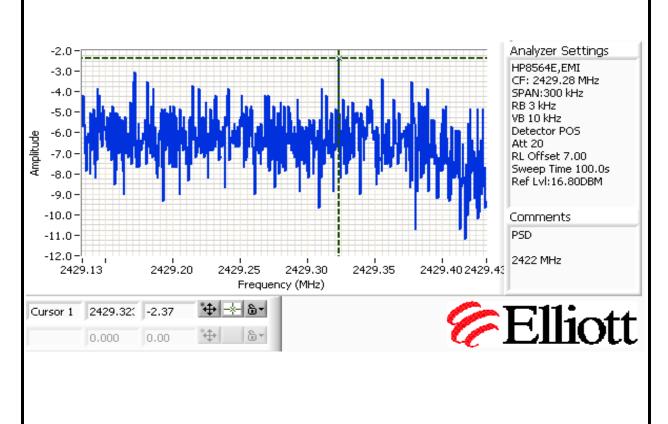
Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
wodei.	WRIOUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

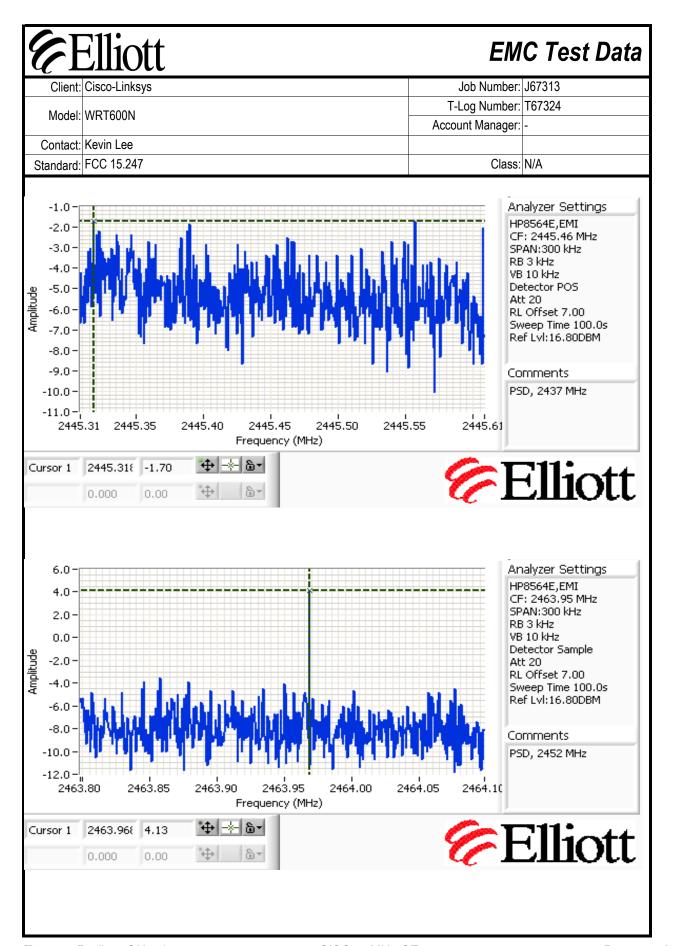
Run #2: Power spectral Density

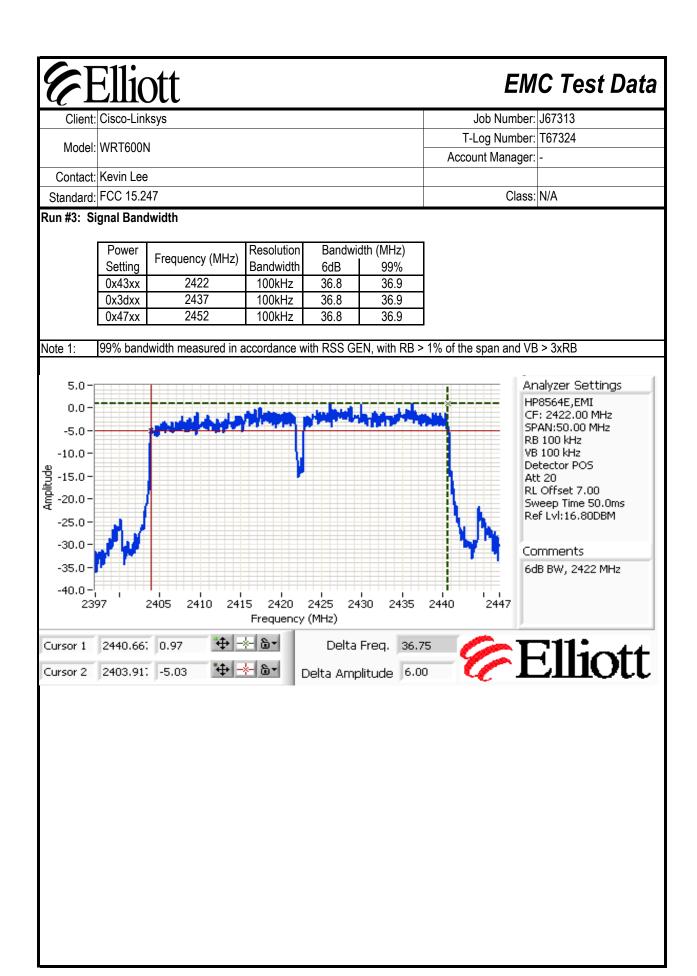
Power	Frequency (MHz)	PSD	Limit	Result
Setting	riequency (Mi iz)	(dBm/3kHz) Note 1	dBm/3kHz	
0x43xx	2422	-2.4	8.0	Pass
0x3dxx	2437	-1.7	8.0	Pass
0x47xx	2452	4.1	8.0	Pass

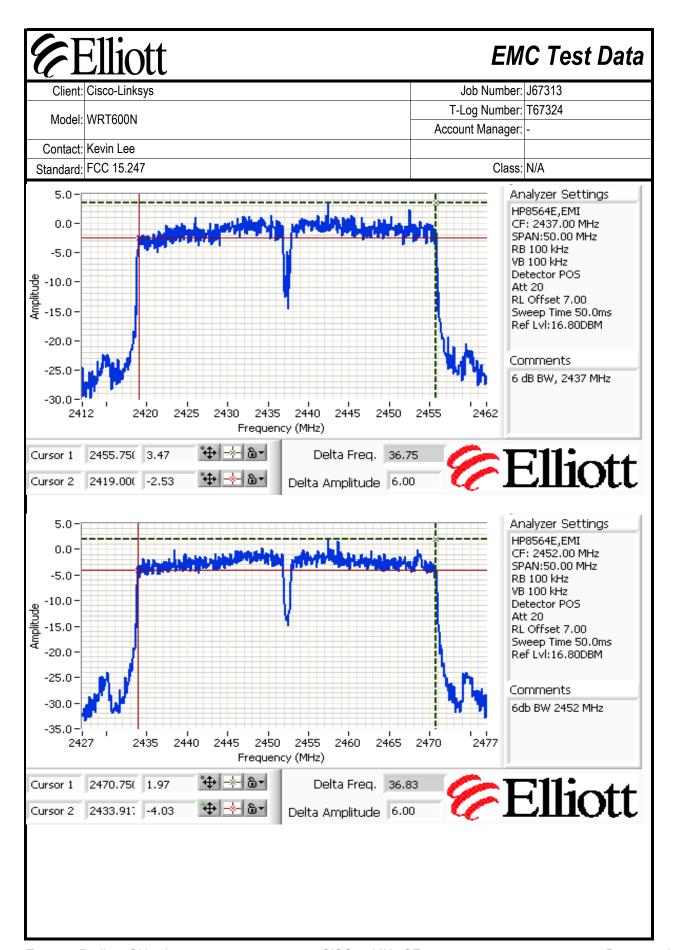
Note 1:

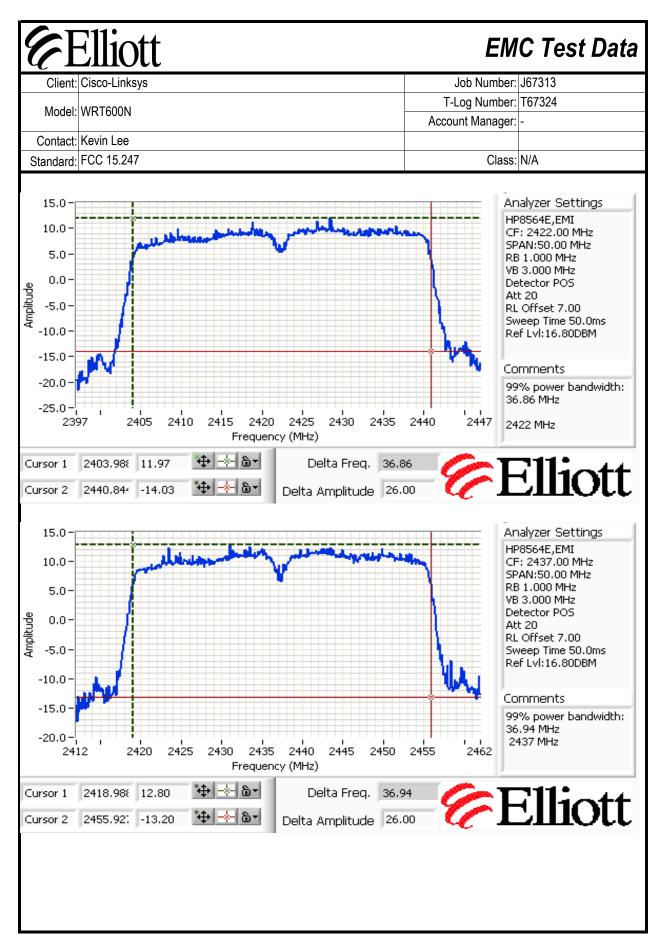
Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.

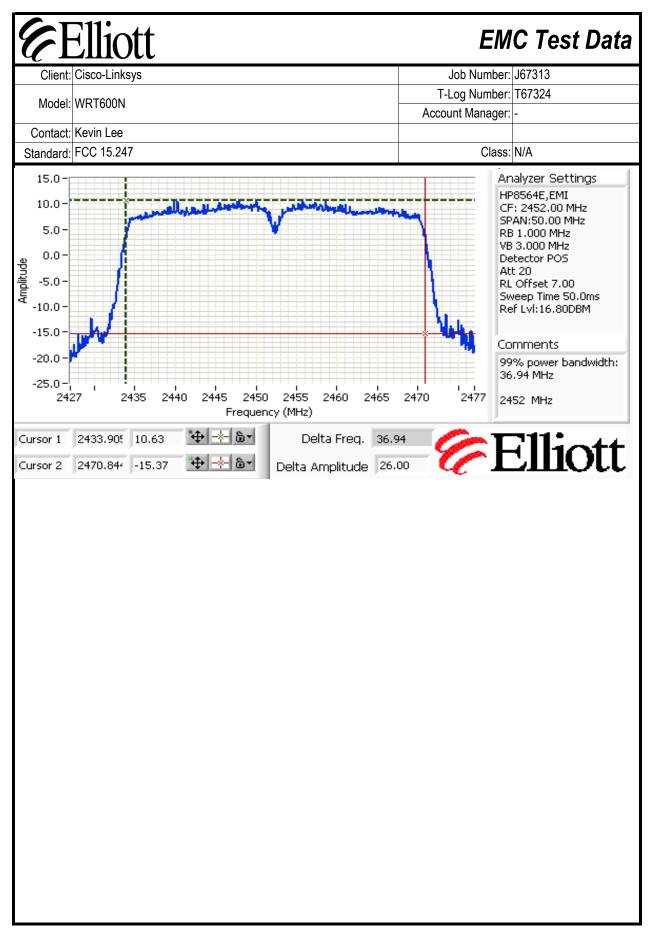












EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #4: Out of Band Spurious Emissions Frequency (MHz) Result Limit -61.7 dBc @ 21.765 2422 -30dBc GHz -54.8 dBc @ 21.515 2437 -30dBc GHz -57.2 dBc @ 21.682 2452 -30dBc GHz Plots for low channel, power setting(s) = 0x43xxAnalyzer Settings 10.0 HP8564E,EMI 0.0 CF: 12515.00 MHz SPAN:24970.00 MHz RB 100 kHz -10.0-VB 100 kHz Detector POS -20.0 --30.0 -Att 20 RL Offset 7.00 Sweep Time 14.0s

10000.0

Frequency (MHz)

15000.0

20000.0

Delta Freq. 21765.52

Delta Amplitude 61.67

-40.0

-50.0

-60.0 -

Cursor 1

30.0

5000.0

2402.15(9.47

Cursor 1 24167.6t -52.20

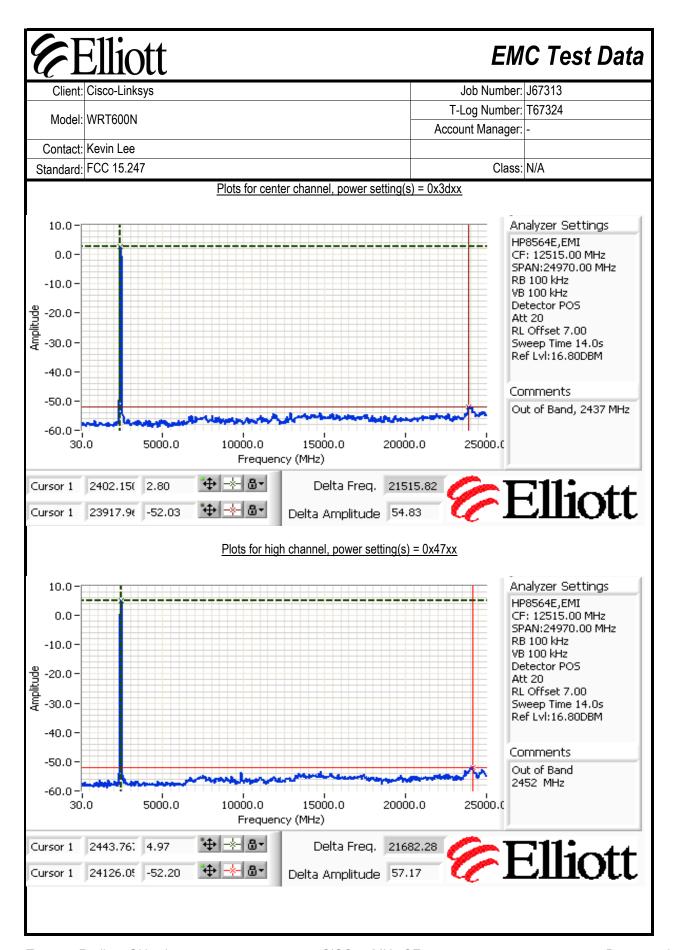
Ref Lvl:16.80DBM

Comments

Out of Band

2422 MHz

25000.0



•			
Client:	Cisco-Linksys	Job Number:	J67313
Model: V	MIDTEOON	T-Log Number:	T67324
	WKTOOUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements MIMO (2.4GHz = 802.11n, 20 MHz) Power, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

ve. specification listed above.

Date of Test: 3/20/2007 Config. Used: 1

Test Engineer: Juan Martinez Config Change: None

Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 18 °C

Rel. Humidity: 45 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	21.5 dBm
2	Power spectral Density (PSD)	15.247(d)	Pass	-0.9 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	17.8 MHz
3	99% Bandwidth	RSS GEN	-	18.4 MHz
4	Spurious emissions	15.247(b)	Pass	Refer to plots

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Elliott

EMC Test Data

_			
Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
wodei.	VVICTOUDIN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1: Output Power, MCS0

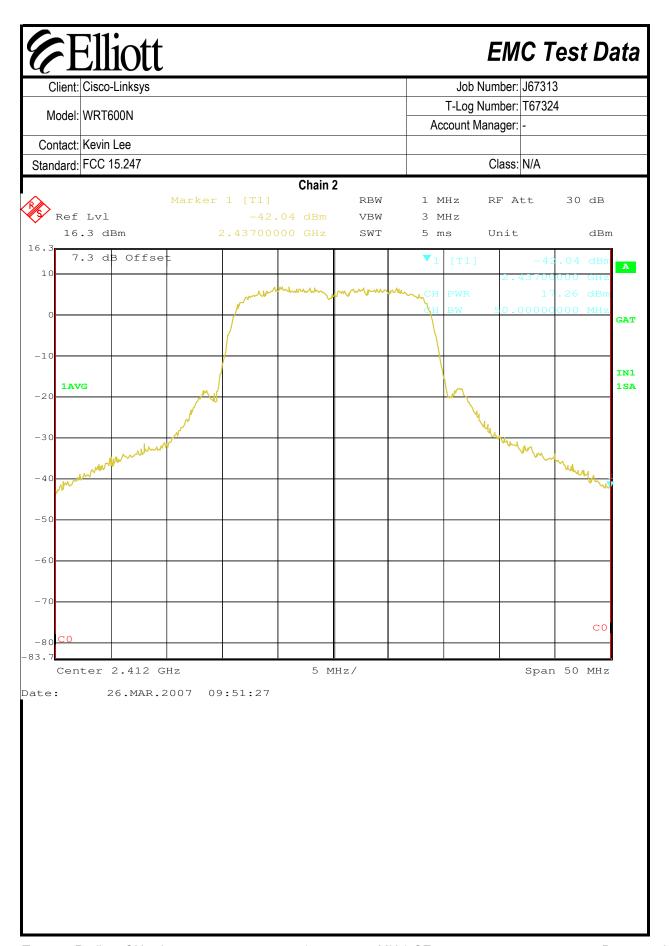
Transmitted signal on chain is coherent? Yes

ESI Power Measurements

Power	Frequency (MHz)	Output	Power (dBr	n) ^{Note 1}	Antenr	na Gain (dBi	Note 3	EIRF	Note 2
Setting⁴	Frequency (Miriz)	Chain 1	Chain 2	Total	Chain 1	Chain 2	Total	dBm	W
0x433E	2412	17.1	17.3	20.2	3.6	3.6	6.6	26.8	0.481
0x3F3A	2437	18.7	18.3	21.5	3.6	3.6	6.6	28.1	0.649
0x4C46	2462	16.2	16.3	19.3	3.6	3.6	6.6	25.9	0.386

Note 1:	RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the ESI analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 30 MHz.
Note 2:	EIRP - if transmit chains are coherent then the EIRP is calculated from the sum of the antenna gains plus the total power (i.e. beam-forming is assumed because of coherency on the chains). If the individual chains are incoherent then the EIRP is calculated from the sum of the individual EIRPs for each chain.
Note 3:	If the transmit chains are coherent then the total system antenna gain is the sum of the numeric gains for each antenna. If the transmit chains are incoherent then the system antenna gain is not applicable as each transmit chain can be treated independently.
Note 4:	Power setting - if a single number the same power setting was used for each chain. If multiple numbers the power setting for each chain is separated by a comma (e.g. x,y would indicate power setting x for chain 1, power setting y for chain 2.

%	Ellic	ott						E	ΞM	C T	est	t D	ata
Client	Cisco-Lir	ıksvs						Job Nur	nber:	J6731	3		
	WRT600							T-Log Nur					
								count Man					
	Kevin Le												
Standard:	FCC 15.2	247						C	lass:	N/A			
					Chain	1							
Ŕ			Marker	1 [T1]		RBW	1 M	IHz R	F A	tt	30	dВ	
•	Lvl				.58 dBm	VBW	3 M						
16.3	.3 dBm			2.437000	000 GHz	SWT	5 m	ıs U	nit		1	dBm	1 3
10	.3 dB	Offset	<u> </u>				v ₁	[T1]		-42	.58	dBm	A
				a Mund	mmm	Munn	CH	PWR	2.4	43700 17	1.16	dBm	
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Client: Clisco-Linksys Job Number: J67313 T-Log Number: 167324 Account Manager:		E		iott l inksys								Ε	M	C T	est	t D	ata
Account Manager Contact Kevin Lee Standard FCC 15.247 Class N/A	С	lient: C	isco	-Linksys							Job I	Num	ber:	J6731	3		
Contact: Kevin Lee Standard; FCC 15.247 Chain 1 Marker 1 [T1] RBW 1 MHz RF Att 30 dB Ref Lv1 6.24 dBm VBW 3 MHz 16.3 dBm 2.43700000 GHz SWT 5 ms Unit dBm 16.3 7.3 dB Offset 1 12.68 dBm 10 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1											T-Log I	Num	ber:	T6732	4		
Claim FCC 15.247 Claim Chain 1	IVI	odei. v	VKI	DUUN						Ac	count M	lana	ger:	-			
Chain 1 Marker 1 [T1] RBW 1 MHz RF Att 30 dB Ref Lv1 16.3 dBm 2.43700000 GHz SWT 5 ms Unit dBm 16.3 7.3 dB Offset																	
Ref Lv1 6.24 dBm VBW 3 MHz 16.3 dBm 2.43700000 GHz SWT 5 ms Unit dBm 7.3 dB Offset 7.	Stand	dard: F	CC ′	15.247								Cl	ass:	N/A			
Ref Lv1 6.24 dBm VBW 3 MHz 16.3 dBm 2.43700000 GHz SWT 5 ms Unit dBm 16.3 7.3 dB Offset							Chain	1									
16.3 dBm 2.4370000 GHz SWT 5 ms Unit dBm 7.3 dB Offset		D 6 3			Marker		0.4 15					RI	- A	tt	30	dВ	
7.3 dB Offset	•			Bm								IJr	nit			dBm	1
10	16.3					I	1	5W±				01	I			QDI.	I
18.68 dBm (H EW SO.00000 DOC MHz) GAT 10 10 10 10 10 10 10 10 10 1	1.0	7.	3 d	B Offset	T.					1	[T1]			6			A
1AVG 1AVG 1SBW 0.00000 000 MHz GAT 1SA						and the same	mmen	······	man	СН			2.4				
-10 -20 -30 -40 -40 -50 -60 -70 -83.7 Center 2.437 GHz 5 MHz/ Span 50 MHz	0					/				дн		5	0.0				
-20 1AVG 1SA						/											GAT
-20 1AVG 1SA	-10									_\							
-30 -40 -50 -60 -70 -80 Center 2.437 GHz 5 MHz/ Span 50 MHz										\							IN1
-30 -40 -40 -50 -60 -70 -80 -80 -80 -80 -80 -80 -80 -80 -80 -8	-20	1AVG			\sim						W						1SA
-30 -40 -40 -50 -60 -70 -80 C0 -83.7 Center 2.437 GHz 5 MHz/ Span 50 MHz	20			~	-Mil							w	m				
-40 -50 -60 -70 -80 C0 -83.7 Center 2.437 GHz 5 MHz/ Span 50 MHz	_30			www.									W	Mayon			
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-83.7 Center 2.437 GHz 5 MHz/ Span 50 MHz		CO														C0	
Center 2.437 GHz 5 MHz/ Span 50 MHz																	
Date: 26.MAR.2007 11:45:19		Cent	er	2.437 G	Hz		5 M	Hz/						Span	n 50	MHz	_
	Date:	:	2	26.MAR.2	2007 11	:45:19											

1	F		iott								EN	1C 7	Test	t D	ata
С	lient:	Cisco-	-Linksys							Job N	lumbe	r: J673	13		
М	odel.	WRT6	SOON							T-Log N			24		
									Ac	count M	anage	r: -			
		Kevin													
Stan	dard:	FCC 1	15.247								Class	s: N/A			
						Chain									
\$	Pof	Lvl		Marker		.70 dBm	RBW VBW		1 M 3 M	Hz Hz	RF I	Att	30	dВ	
\		.3 di	Bm	2	2.437000		SWT		5 m		Uni	t		dBm	L
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	Cent	ter	2.437 G	Hz		5 M	Mz/					Spa	n 50	MHz	
Date	:	2	26.MAR.2	2007 11	:48:17										

1	Elli	iott						E	МС	Test	Data
Clie	nt: Cisco-l	_inksys						Job Num	nber: J673	313	
Mod	lel: WRT60	OUN						T-Log Num		324	
							Ac	count Mana	iger: -		
	ct: Kevin I										
Standa	rd: FCC 1	5.247						С	lass: N/A		
					Chain 1						
	c + 1		Marker		0.1 15	RBW	1 N		F Att	30	dB
•	ef Lvl 12.3 di	3m		-44. 2.437000	31 dBm	VBW SWT	3 N 5 m		nit		dBm
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	7.3 d	3 Offset					<u> </u>	[T1]	-	44.31	dBm A
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-50											
-60											
-70											
-80											C0
	0										
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	E		iott								El	M	C T	est	t D	ata
С	lient:	Cisco	-Linksys							Job I	Numb	er: c	J6731	3		
		WRT								T-Log I	Numb	er:	Г6732	4		
IVI	ouei.	WKI	OUUN						Ac	count M	lanag	er: -				
		Kevin														
Stan	dard:	FCC	15.247								Cla	ss: N	N/A			
•						Chain										
\$	Ref	Lvl		Marker		.81 dBm	RBW VBW		1 M	lHz IHz	RF.	At	t	30	dВ	
~		.3 d	Bm	2	2.437000		SWT		5 m		Un	it			dBm	ì
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	·				AM	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Manual	J.,	. ' _	[TI]	2	2.4		000	GHZ	A
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					/				CH	BW	50	0.0		000	MHz	GAT
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	1AV	G								,/						1SA
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Date:	:	2	26.MAR.2	2007 12	:56:48											



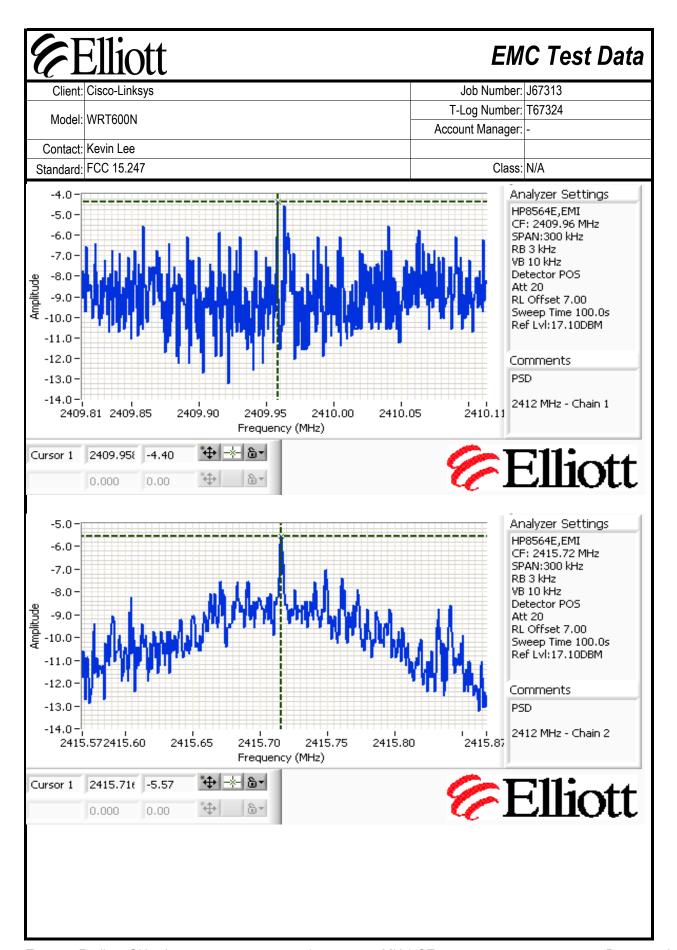
•			
Client:	Cisco-Linksys	Job Number:	J67313
Model: V	MIDTEOON	T-Log Number:	T67324
	WKTOOUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

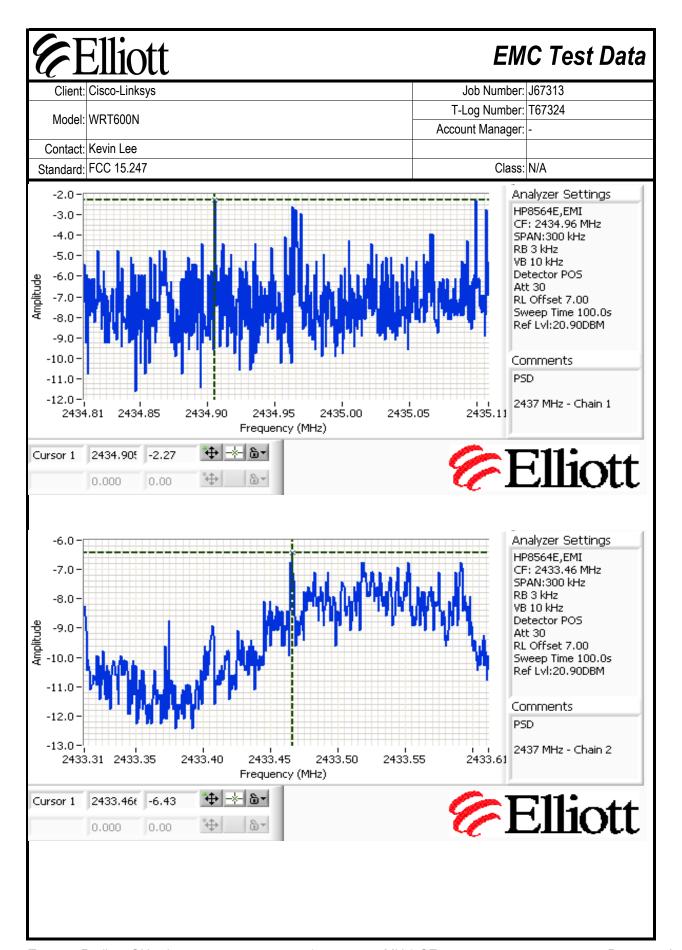
Run #2: Power spectral Density

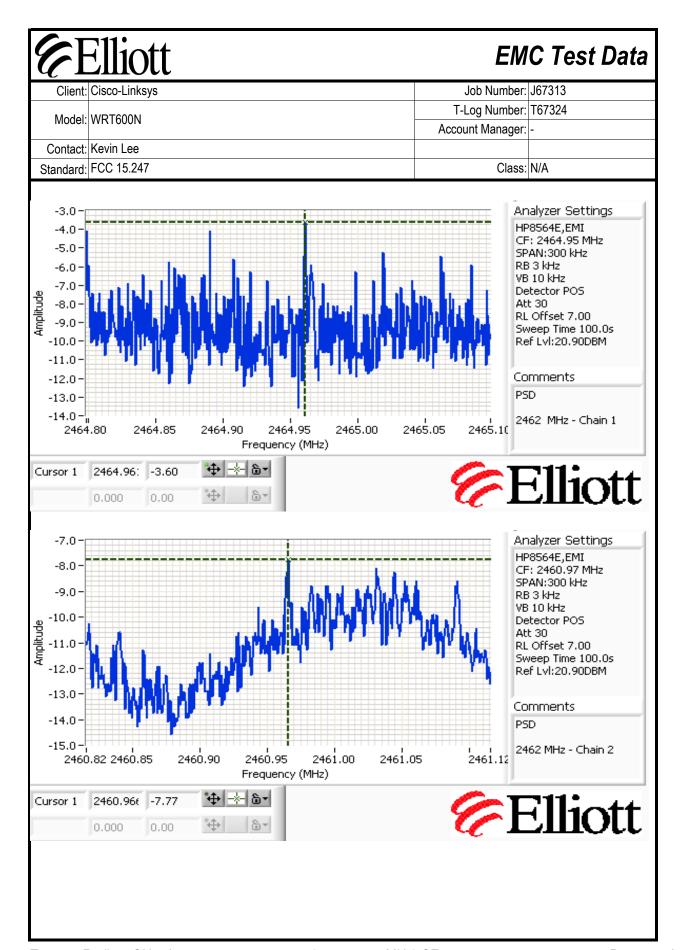
Power	Frequency (MHz)	PSD	(dBm/3kHz)	Note 1	Limit	Result
Setting	Frequency (Miriz)	Chain 1	Chain 2	Total	dBm/3kHz	
0x433E	2412	-4.4	-5.6	-1.9	8.0	Pass
0x3F3A	2437	-2.3	-6.4	-0.9	8.0	Pass
0x4C46	2462	-3.6	-7.7	-2.2	8.0	Pass

Note 1:

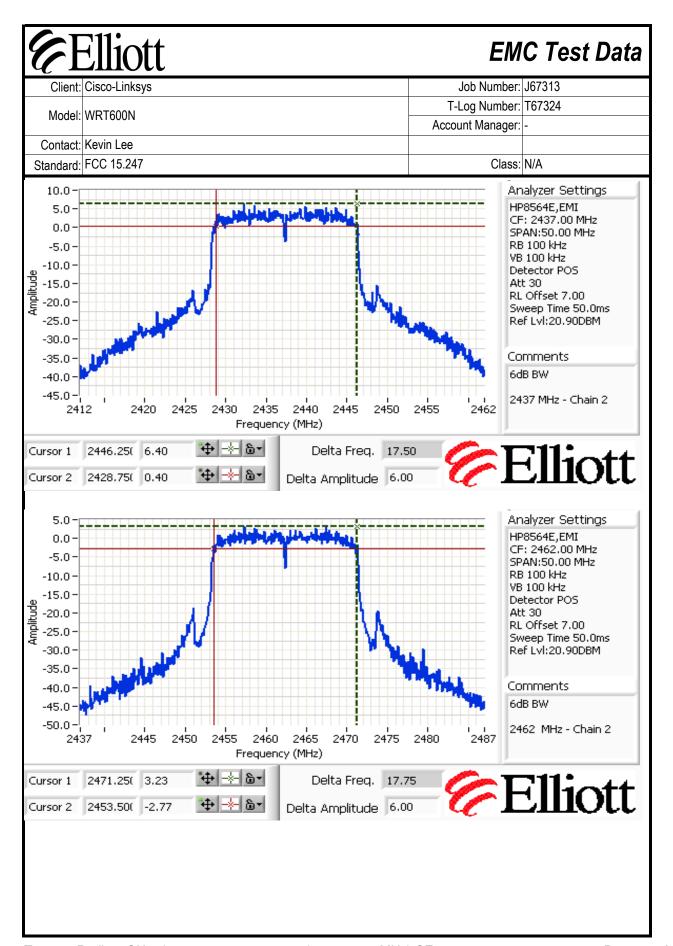
Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.

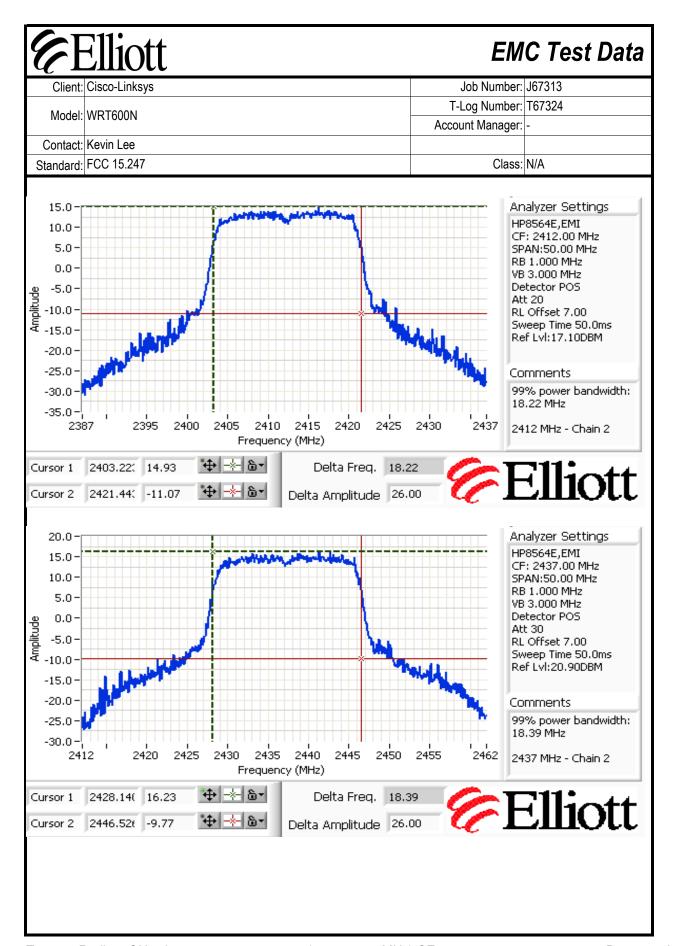


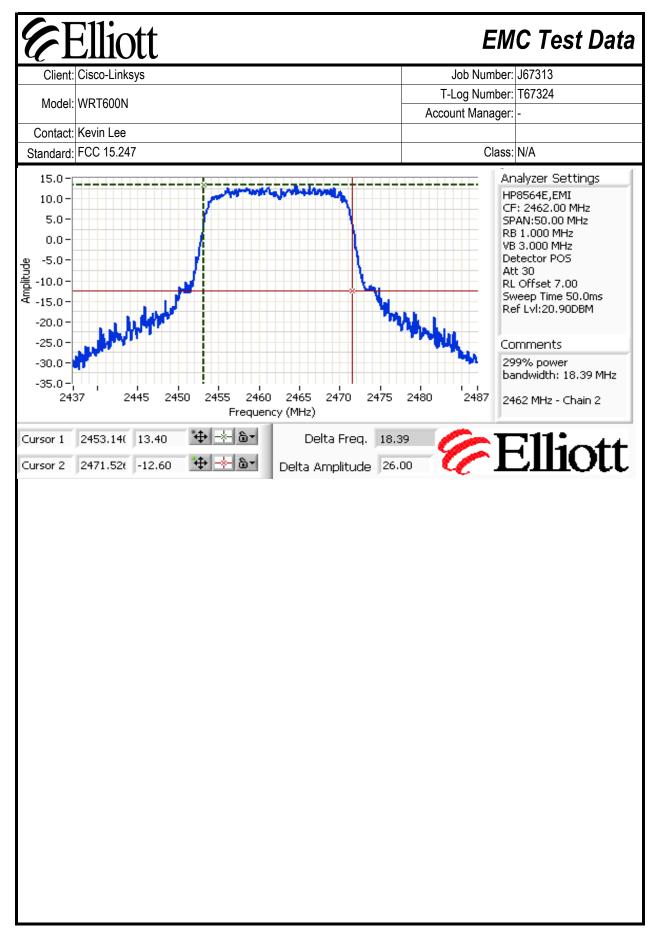




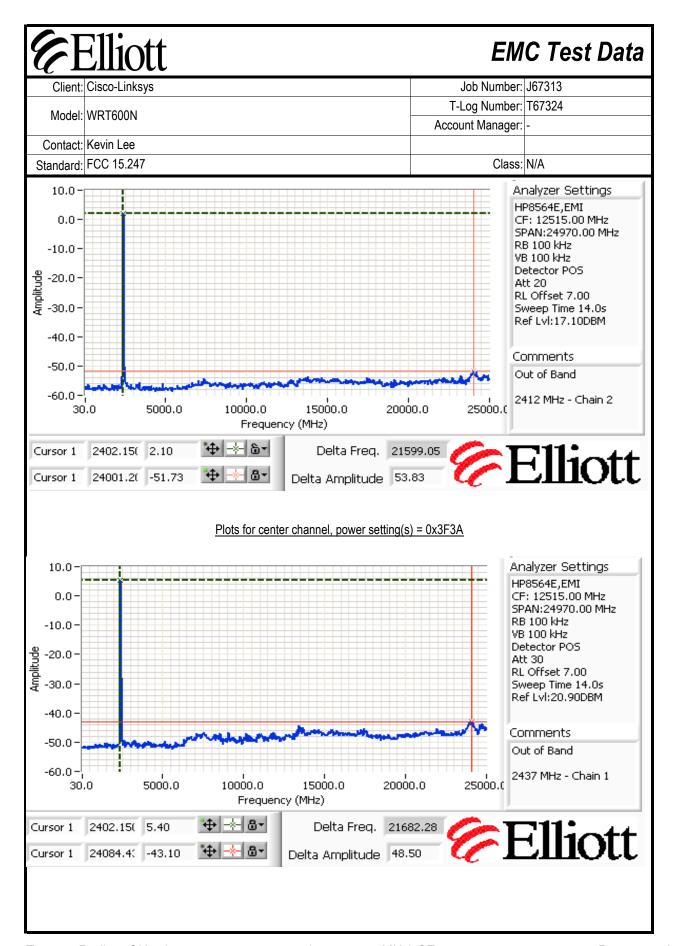
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #3: Signal Bandwidth Power Resolution Bandwidth (MHz) Frequency (MHz) Settina Bandwidth 6dB 99% 0x433E 2412 100kHz 17.7 18.2 0x3F3A 2437 100kHz 17.5 18.4 2462 0x4C46 100kHz 17.8 18.4 Measured on a single chain (Chain 2) Note 1: Note 2: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB Analyzer Settings HP8564E,EMI 0.0 CF: 2412.00 MHz -5.0 SPAN:50.00 MHz RB 100 kHz -10.0 -VB 100 kHz -15.0 Detector POS Att 20 -20.0 RL Offset 7.00 -25.0· Sweep Time 50.0ms -30.0 Ref Lvl:17.10DBM -35.0 Comments -40.0 6dB Bandwidth, Chain -45.0 2, 2412 MHz -50.0 2395 2400 2405 2410 2415 2420 2425 2387 Frequency (MHz) **♦** ->- 6-2421.08(3.77 Delta Freq. 17.67 Cursor 1 Elliott Cursor 2 2403.41% -2.23 Delta Amplitude 6.00

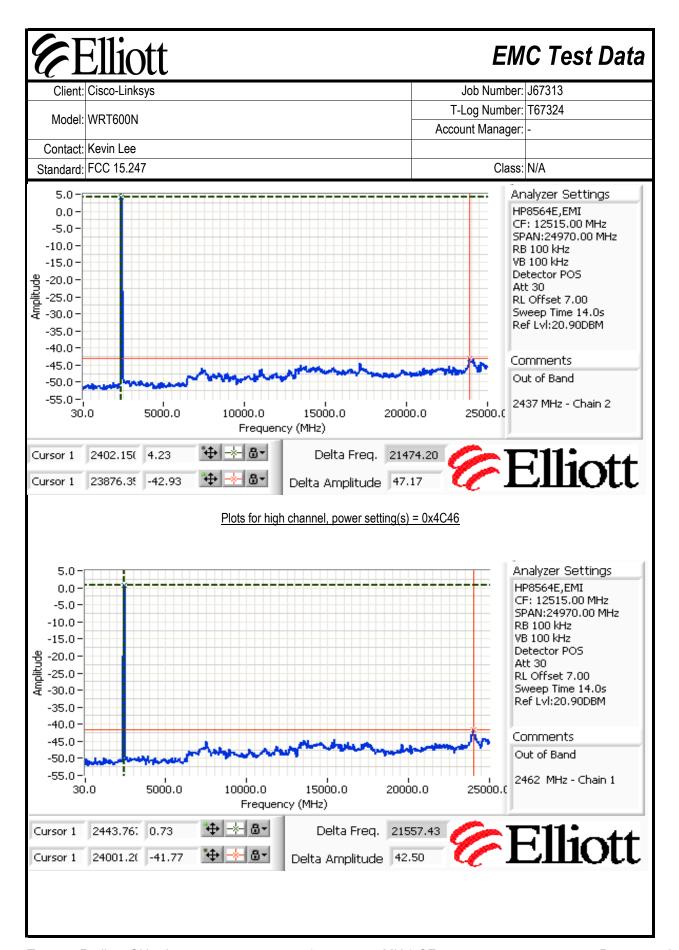


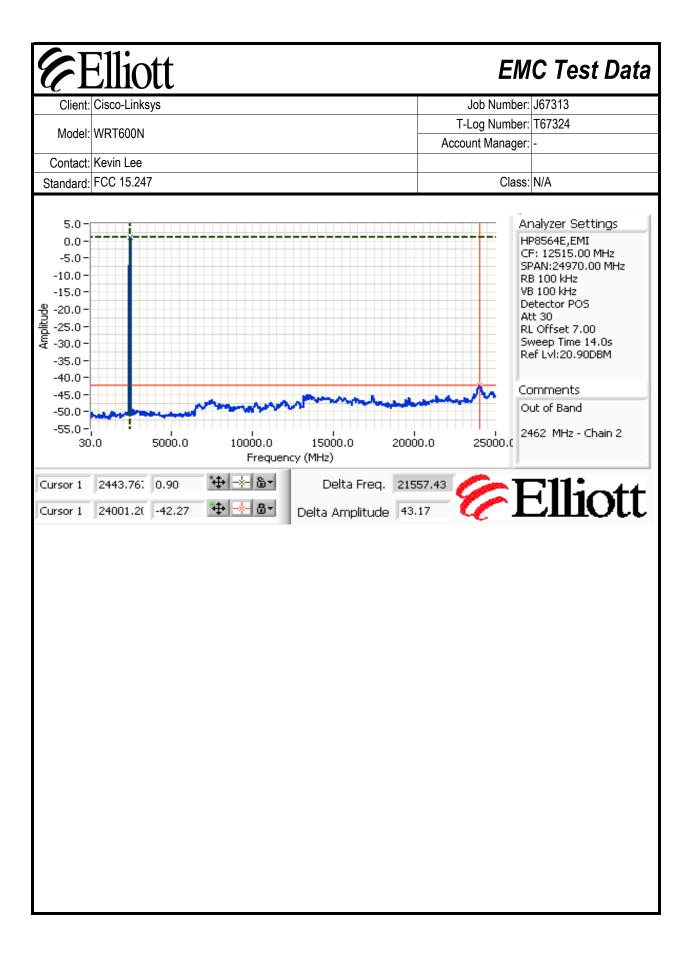




EMC Test Data Client: Cisco-Linksys Job Number: J67313 T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #4: Out of Band Spurious Emissions Frequency (MHz) **Power Setting** Result Limit -52.7 dBc @ 21.515 0x433E 2412 -30dBc GHz -47.2 dBc @ 21.474 0x3F3A 2437 -30dBc GHz -42.5 dBc @ 21.557 0x4C46 2462 -30dBc GHz Note 1: Measured on each chain individually Plots for low channel, power setting(s) = 0x433E Analyzer Settings 10.0 HP8564E,EMI CF: 12515.00 MHz 0.0 SPAN:24970.00 MHz RB 100 kHz -10.0 VB 100 kHz Detector POS -20.0 Att 20 RL Offset 7.00 -30.0 Sweep Time 14.0s Ref Lvl:17.10DBM -40.0 Comments -50.0 Out of Band -60.0 2412 MHz - Chain 1 15000.0 5000.0 30.0 10000.0 20000.0 25000.0 Frequency (MHz) 2402.15(0.93 **↔** ->- 8-1 Delta Freq. 21515.82 Cursor 1 23917.96 -51.73 Delta Amplitude 52.67







•			
Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
wodei.	WINTOOON	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements MIMO (2.4GHz = 802.11n, 40 MHz) Power, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

e. specification listed above.

Date of Test: 3/20/2007 and 3/27/07 Config. Used: 1

Test Engineer: Juan M. and Mark H. Config Change: None

Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 18 °C

Rel. Humidity: 45 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	20.6 dBm
2	Power spectral Density (PSD)	15.247(d)	Pass	1.0 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	36.7 MHz
3	99% Bandwidth	RSS GEN	-	37.1 MHz
4	Spurious emissions	15.247(b)	Pass	Refer to plots

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

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Client:	Cisco-Linksys	Job Number:	J67313
Madal	WRT600N	T-Log Number:	T67324
Model.	WINTOOON	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1: Output Power, MCS0

Transmitted signal on chain is coherent? Yes

ESI Power Measurements

Power	Output Power (dBm) Note 1				Antenn	a Gain (dBi	Note 3	EIRP	Note 2
Setting ⁴	riequency (Miliz)	Chain 1	Chain 2	Total	Chain 1	Chain 2	Total	dBm	W
0x423E	2422	16.6	16.6	19.6	3.6	3.6	6.6	26.2	0.419
0x403C	2437	17.7	17.5	20.6	3.6	3.6	6.6	27.2	0.527
0x4A46	2452	15.9	15.5	18.7	3.6	3.6	6.6	25.3	0.341

Note 1:	RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the ESI analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz
Note 2:	EIRP - if transmit chains are coherent then the EIRP is calculated from the sum of the antenna gains plus the total power (i.e. beam-forming is assumed because of coherency on the chains). If the individual chains are incoherent then the EIRP is calculated from the sum of the individual EIRPs for each chain.
Note 3:	If the transmit chains are coherent then the total system antenna gain is the sum of the numeric gains for each antenna. If the transmit chains are incoherent then the system antenna gain is not applicable as each transmit chain can be treated independently.
Note 4:	Power setting - if a single number the same power setting was used for each chain. If multiple numbers the power setting for each chain is separated by a comma (e.g. x,y would indicate power setting x for chain 1, power setting y for chain 2.

1	El	liott							EM	IC T	est	Da	ita
С	lient: Ciso	co-Linksys						J	ob Number:	J6731	3		
NA	odel: WR	TEOON						T-L	og Number:	T6732	4		
IVI	ouel. WK	TOUUIN						Accou	nt Manager:	-			
	ntact: Kev												
Stand	dard: FC0	15.247							Class	N/A			
					Chain '								
			Marker			RBW		1 MHz	RF A	\tt	20 d	lB	
* 3	Ref Lv 14.2			-27. 2.447000	06 dBm	VBW SWT		1 MHz 5 ms	Unit			lBm	
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												C 0	
-80	C0												
-85.8	a .	0 100 0								-	F0.14		
		2.422 G			5 M	Hz/				Spar	n 50 M	HZ	
Date	:	27.MAR.2	2007 08	3:49:13									

Elliott			EM	C Test Data
Client: Cisco-Linksys			Job Number:	J67313
Model: WRT600N			T-Log Number:	T67324
			Account Manager:	-
Contact: Kevin Lee			Ol	NI/A
Standard: FCC 15.247	Oh e lie	^	Class:	N/A
	Chain	2		
	Marker 1 [T1]	RBW	1 MHz RF A	tt 20 dB
Ref Lvl	-29.32 dBm	VBW	1 MHz	
14.2 dBm	2.44700000 GHz	SWT	5 ms Unit	dBm
7.2 dB Offse	t		▼1 [T1]	-29.32 dBm
		4.4.4.4.		44700000 GHz
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Center 2.422 G	GHz 5 M	Mz/		Span 50 MHz
Date: 27.MAR.2	2007 08:45:21			

Client Cisco-Linksys Job Number J67313		E		iott							EMC	Test D	ata
Model: WRT600N	C	lient:	Cisco-	Linksys						Job Nu	mber: J673	13	
Account Manager. Contact: Kevin Lee Standard: FCC 15.247 Chain 1 Marker 1 [T1] RBW 1 MHz RF Att 20 dB Ref Lv1 3.42 dBm VBW 1 MHz 14.2 dBm 2.44700000 GHz SWT 5 ms Unit dBm 2.44700000 GHz SWT 5 ms Unit 3.42 dBm 7.2 dB Offset 7.2 dB Offset 7.3 dB CH BW 50.00000000 MHz GAT -10 -20 -30 -60 -60 -60 -70 -80 Center 2.437 GHz 5 MHz/ Span 50 MHz													
Claim FCC 15.247 Claim Chain RBW 1 MHz RF Att 20 dB Ref Lv1 3.42 dBm VEW 1 MHz The first The first	IVI	odel:	WKI6	000N					Ac				
Chain 1 Marker 1 [T1] Ref Lv1 14.2 dBm 2.44700000 GHz NT TO TO TO TO TO TO TO TO TO	Cor	ntact:	Kevin	Lee									
Chain 1 Marker 1 [T1] Ref Lv1 14.2 dBm 2.44700000 GHz SWT 5 ms Unit dBm 14.2 7.2 dB Offset CH BW 2.44700000 GHz AT IT1 18A CH BW 2.0000000000 MHZ GAT TN1 18A Conter 2.437 GHz 5 MHz/ Span 50 MHz	Stan	dard:	FCC 1	5.247						(Class: N/A		
Ref Lv1 3.42 dBm VBW 1 MHz 14.2 dBm 2.44700000 GHz SWT 5 ms Unit dBm 14.2 7.2 dB Offset 2.44700000 GHz 2.44700000 GHz O CH EW 50.00000000 MHz GAT -10 -20 1AVG -30 -40 -50 -60 -60 -70 -80 CO -85.8 Center 2.437 GHz 5 MHz/ Span 50 MHz		I					Chain	1					
14.2 dBm	R				Marker	1 [T1]		RBW	1 M	Mz I	RF Att	20 dB	
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2.44700000 GHz 17.66 dBm CH BW 50.0000000 MHz GAT 1N1 1SA -30 -60 -70 -80 CO Span 50 MHz		7.	.2 d	B Offset	=				V ₁	[T1]		3.42 dBr	n A
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-50 -60 -70 -80 C0 -85.8 Center 2.437 GHz 5 MHz/ Span 50 MHz													
-60 -70 -80 C0 -85.8 Center 2.437 GHz 5 MHz/ Span 50 MHz	-40												
-60 -70 -80 C0 -85.8 Center 2.437 GHz 5 MHz/ Span 50 MHz													
-70 -80 -85.8 Center 2.437 GHz 5 MHz/ Span 50 MHz	-50												-
-70 -80 -85.8 Center 2.437 GHz 5 MHz/ Span 50 MHz													
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-80 C0 C0 C0 Span 50 MHz													
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Center 2.437 GHz 5 MHz/ Span 50 MHz	-80	C0										C0	_
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Elliott			ı	ЕМС 1	est Data
Client: Cisco-Linksys			Job Nu	ımber: J6731	3
Model: WRT600N				mber: T6732	24
			Account Mai	nager: -	
Contact: Kevin Lee					
Standard: FCC 15.247				Class: N/A	
	Chain				
Ref Lvl	Marker 1 [T1] 3.33 dBm	RBW VBW	1 MHz 1	RF Att	20 dB
14.2 dBm	2.44700000 GHz	SWT		Unit	dBm
14.2 7.2 dB Offse	<u> </u>				
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-85.8 Center 2.437 G	Tu 5 1	MHz/		Spar	n 50 MHz
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Date: 27.MAR.2	2007 09:49:10				

Ellio E	tt			EMC Tes	st Data
Client: Cisco-Linksy	S		Job N	lumber: J67313	
Model: WRT600N			T-Log N	lumber: T67324	
			Account Ma	anager: -	
Contact: Kevin Lee					
Standard: FCC 15.247				Class: N/A	
		Chain 1			
Ref Lvl	Marker 1 [T1]	RBW 48 dBm VBW	1 MHz 1 MHz	RF Att 2	:0 dB
14.2 dBm	2.4770000		5 ms	Unit	dBm
14.2 7.2 dB Off	Fsot	<u> </u>	V		
10 7.2 dB 011	LSEL		▼ ₁ [T1]	-31.4 2.4770000	A
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-85.8 Center 2.45	2 GHz	5 MHz/		Span 5	0 MHz
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Elliott			EM	C Test Data
Client: Cisco-Linksys			Job Number:	J67313
Model: WRT600N			T-Log Number:	
			Account Manager:	-
Contact: Kevin Lee				
Standard: FCC 15.247			Class:	N/A
		Chain 2		
®	Marker 1 [T1]	RBW	1 MHz RF A	tt 20 dB
Ref Lvl	-32.96		1 MHz	1
14.2 dBm	2.47700000	GHZ SWT	5 ms Unit	dBm
7.2 dB Offse	t		▼ ₁ [T1]	-32.96 dBm
				47700000 GHz
0		may shymow	CH PWR CH BW 50.7	15.50 dBm
mentul		W		GAT
-10				
-20 -1AVG				IN1 1SA
Λ				
-30 M				\ / M ₁ .
-30 V				1
-40				
-50				
-60				
-70				
				CO
-80 <mark>C0</mark>				
-85.8				
Center 2.452 G	Hz	5 MHz/		Span 50 MHz
Date: 27.MAR.2	2007 10:22:24			



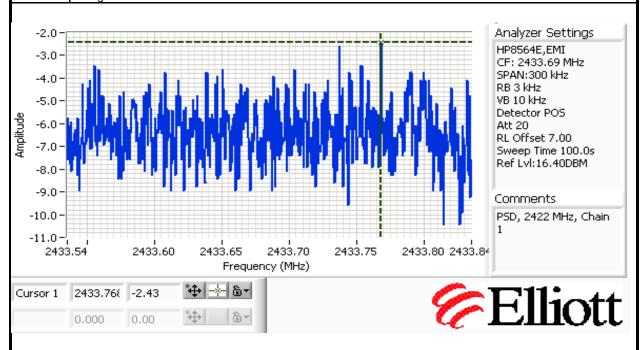
Client:	Cisco-Linksys	Job Number:	J67313
Model:	WRT600N	T-Log Number:	T67324
		Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

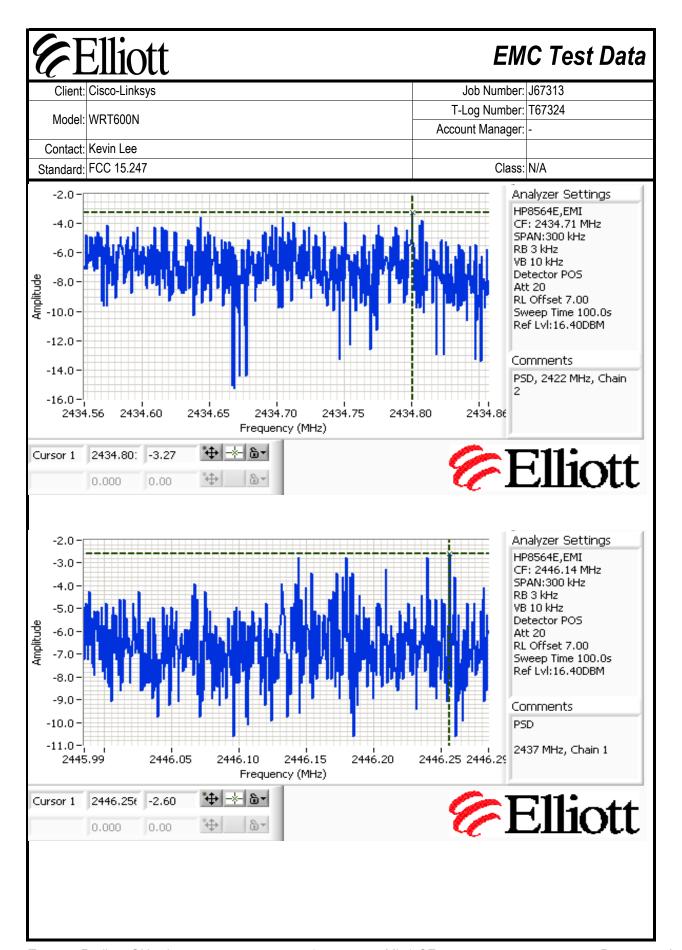
Run #2: Power spectral Density

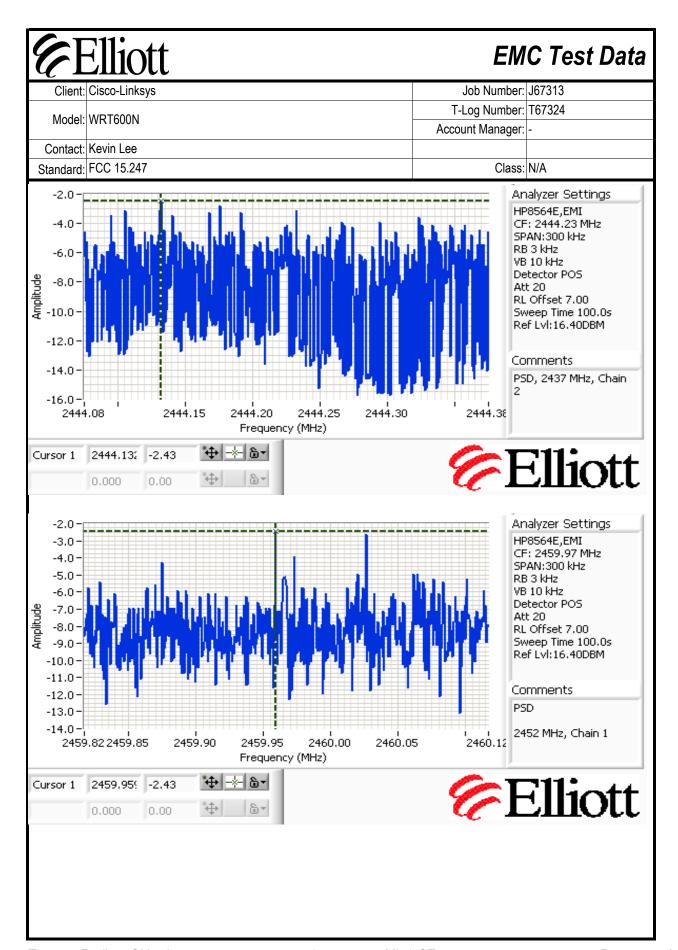
Power	Frequency (MHz)	PSD (dBm/3kHz) Note 1			Limit	Result
Setting	Frequency (Miriz)	Chain 1	Chain 2	Total	dBm/3kHz	
0x423E	2422	-2.4	-3.3	0.2	8.0	Pass
0x403C	2437	-2.6	-2.4	0.5	8.0	Pass
0x4A46	2452	-2.4	-1.6	1.0	8.0	Pass

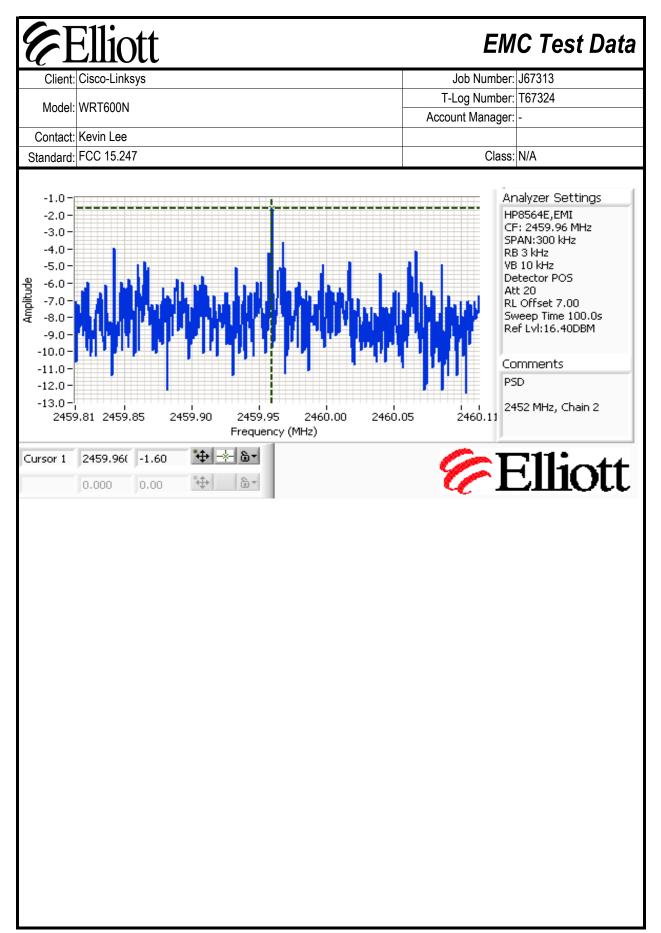
Note 1:

Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.

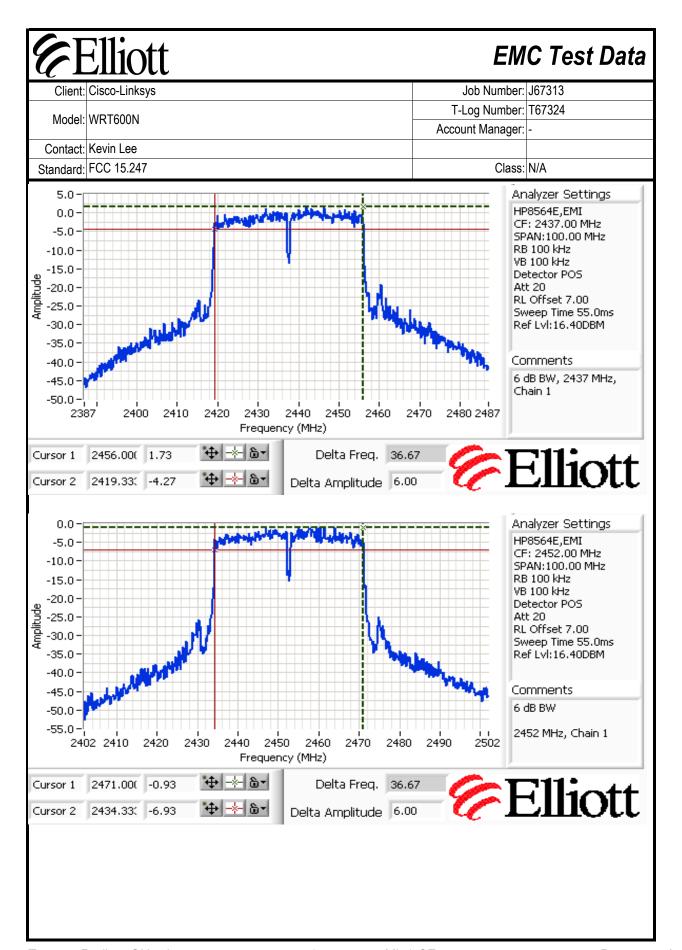


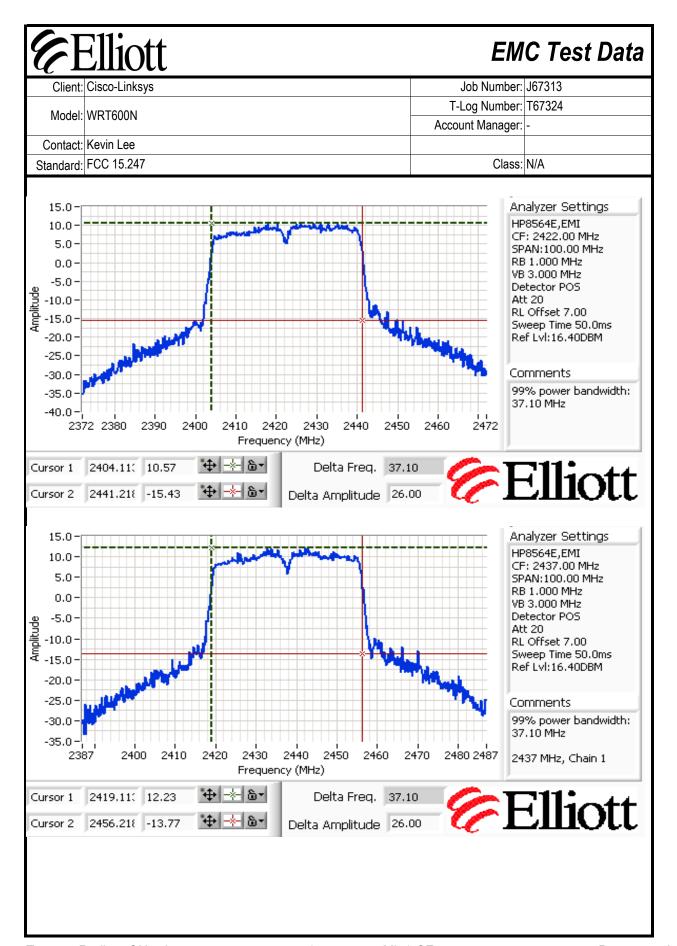


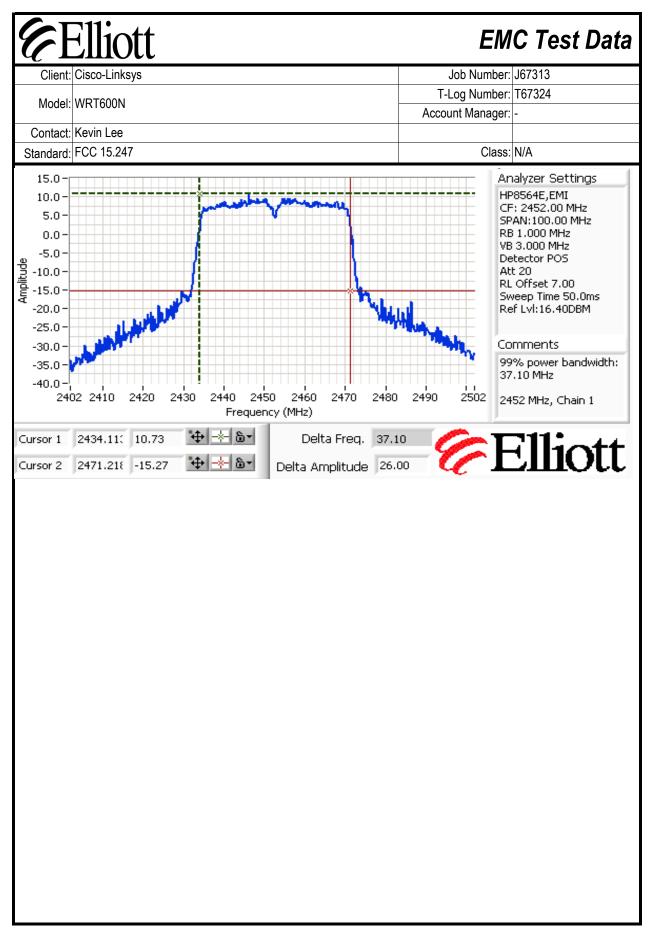




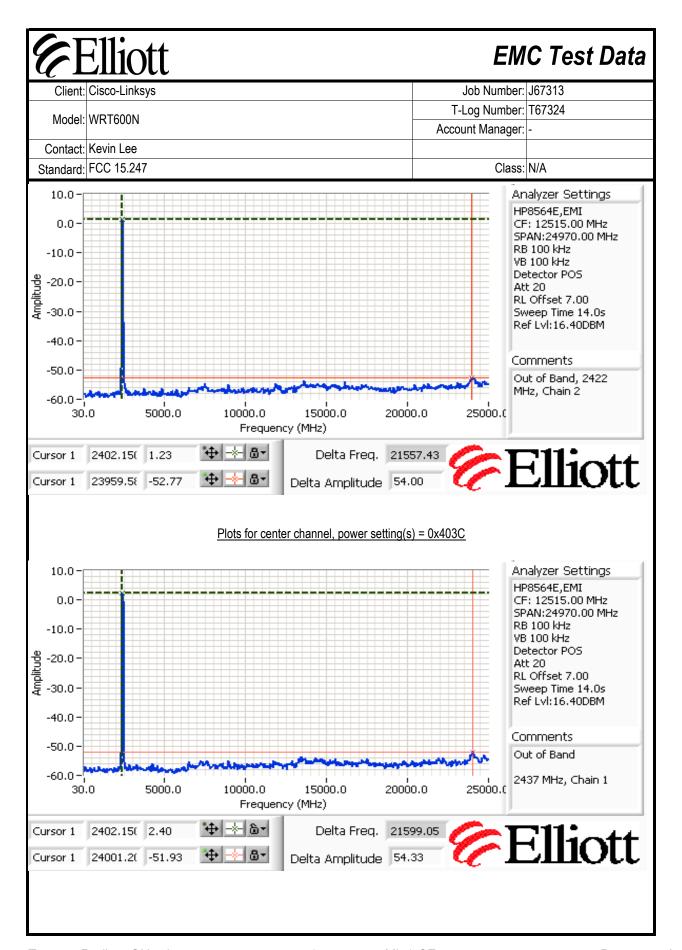
EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #3: Signal Bandwidth Power Resolution Bandwidth (MHz) Frequency (MHz) Settina Bandwidth 6dB 99% 0x423E 2422 100kHz 36.7 37.1 0x403C 2437 100kHz 36.7 37.1 2452 0x4A46 100kHz 36.7 37.1 Note 1: Measured on a single chain (Chain 1) 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB Note 2: Analyzer Settings 5.0 HP8564E,EMI 0.0 CF: 2422,00 MHz -5.0 SPAN:100.00 MHz RB 100 kHz -10.0 VB 100 kHz -15.0 Detector POS Att 10 -20.0 RL Offset 7.00 -25.0· Sweep Time 55.0ms -30.0 Ref Lvl:7.20DBM -35.0 Comments -40.0 6dB BW, 2422 MHz, -45.0 Chain 1 -50.0 2410 2420 2430 2390 2400 2440 2450 2460 2472 Frequency (MHz) -*-|6-▼| **Elliott** 2440.83(1.20 Delta Freq. 36.67 Cursor 1 2404.167 -4.80 Cursor 2 Delta Amplitude 6.00

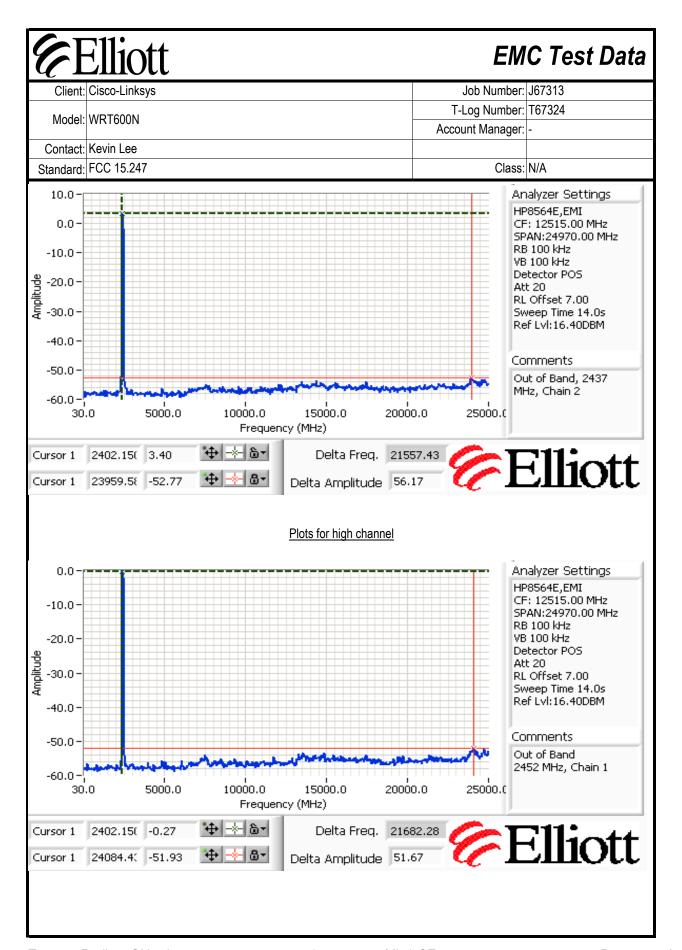


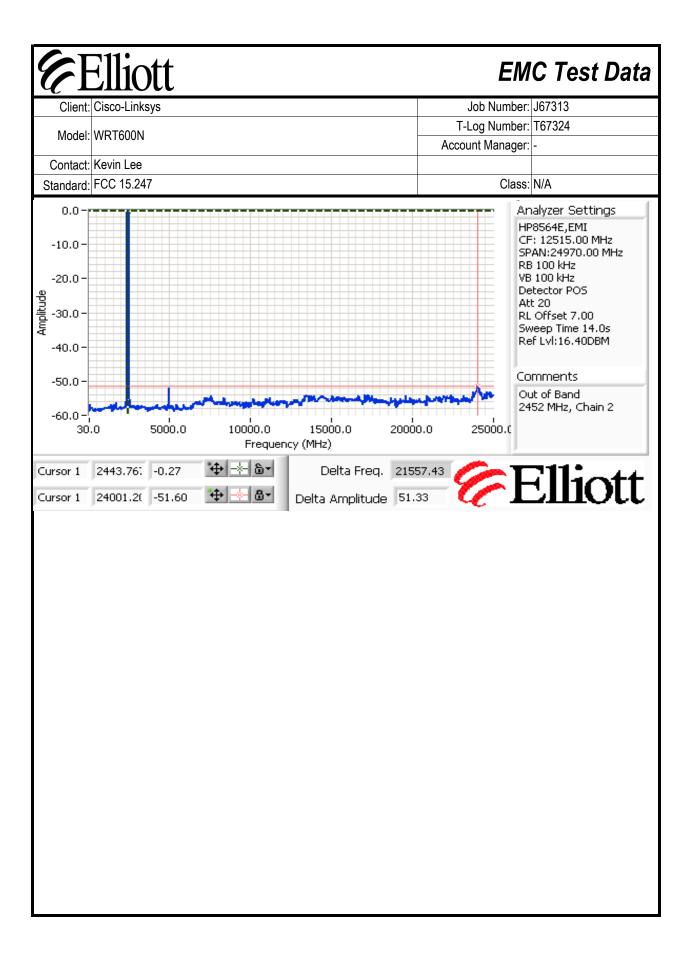




EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #4: Out of Band Spurious Emissions Power Setting Per Chain Frequency (MHz) Result Limit -52.2 dBc @ 22.348 0x423E 2422 -30dBc GHz -54.3 dBc @ 21.599 2437 -30dBc 0x403C GHz -51.7 dBc @ 21.682 0x4A46 2452 -30dBc GHz Measured with all chains connected together through a combiner, unused ports on the combiner terminated in Note 1: 50ohms. Measured on each chain individually Note 1: Plots for low channel, power setting(s) = 0x423EAnalyzer Settings 0.0-HP8564E,EMI CF: 12515.00 MHz -10.0 · SPAN:24970.00 MHz RB 100 kHz VB 100 kHz -20.0° Detector POS Att 20 -30.0 RL Offset 7.00 Sweep Time 14.0s Ref Lvl:16.40DBM -40.0 Comments -50.0 Out of Band, 2422 MHz, Chain 1 -60.0 5000.0 10000.0 15000.0 20000.0 25000.0 30.0 Frequency (MHz) **♦** -≽- 8-Cursor 1 2402.15(-0.43 Delta Freq. 22348.15 **Elliott** Cursor 1 24750.3(-52.60 <- B+ Delta Amplitude 52.17







W !	Elliott
Client:	Cisco-Linksys
Model:	WRT600N

	• 1001 Butu
Job Number:	J67313
T-Log Number:	T67324
Account Manager:	-

Class: N/A

FMC Test Data

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

Contact: Kevin Lee
Standard: FCC 15.247

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

specification listed above.

Date of Test: 3/20/2007 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 20.6 °C

Rel. Humidity: 45 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1 (802.11n Mode) 20MHz CDD MCS0	RE, 30 - 18000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	49.9dBµV/m (312.6µV/m) @ 3453.3MHz (-4.1dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

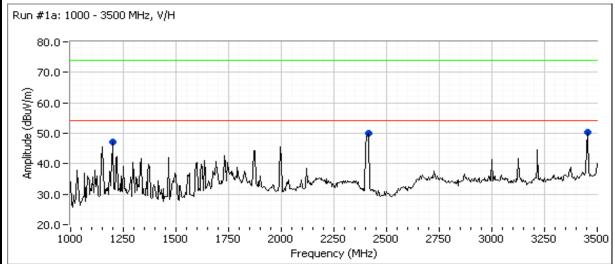
No deviations were made from the requirements of the standard.

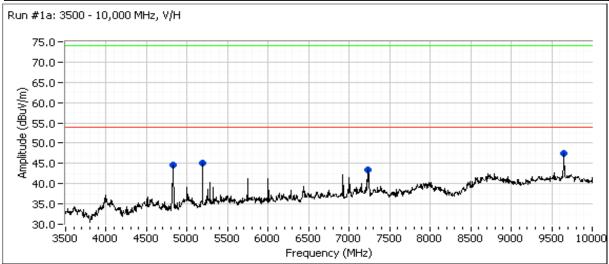
EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Madalı	WRT600N	T-Log Number:	T67324
wodei.	WKTOOON	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 - 18000 MHz. Operating Mode: 802.11n

Run #1a: Low Channel 1 @ 2412 MHz

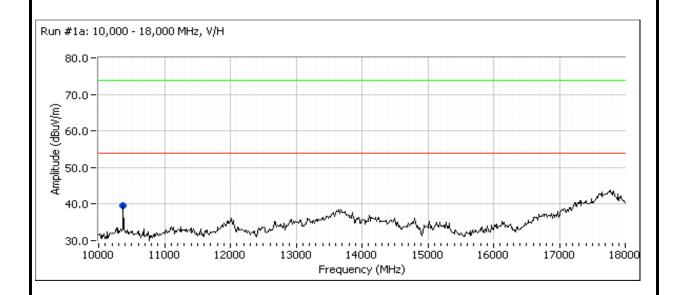




EMC Test Data

_			
Client:	Cisco-Linksys	Job Number:	J67313
Madali	WRT600N	T-Log Number:	T67324
wodei.	VVICTOUDIN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1a: Continued



Preliminary Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	$dB\mu V/m$	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2411.290	50.0	V	54.0	-4.0	Peak	128	1.3	Non-restricted
3453.380	50.2	Η	54.0	-3.8	Peak	126	1.7	Non-restricted
1200.000	47.2	Η	54.0	-6.8	Peak	303	1.4	
4823.980	44.6	V	54.0	-9.4	Peak	56	1.3	
5190.000	45.1	V	54.0	-8.9	Peak	265	1.6	Non-restricted
7235.000	43.5	V	54.0	-10.5	Peak	76	1.3	Non-restricted
9650.000	47.4	V	54.0	-6.6	Peak	358	1.9	Non-restricted
10373.33	39.6	V	54.0	-14.4	Peak	231	1.3	Non-restricted

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

Note 2: No spurious emission, being 20-dB of the limit, were detected above 18GHz.



EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Madal	WRT600N	T-Log Number:	T67324
Model.	WRIOUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1a: Continued

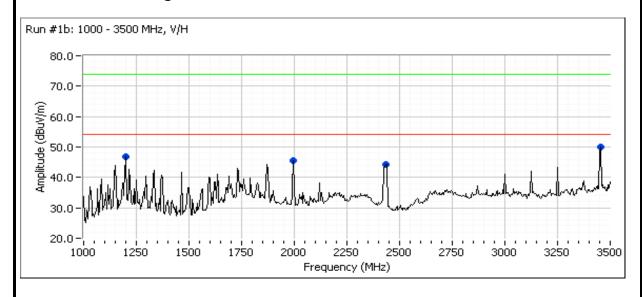
Maximized Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	$dB\mu V/m$	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2410.680	43.5	V	54.0	-10.5	AVG	128	1.3	Non-restricted	
2410.680	52.4	V	74.0	-21.6	PK	128	1.3	Non-restricted	
3453.220	49.3	Н	54.0	-4.7	AVG	123	1.7	Non-restricted	
3453.220	51.9	Н	74.0	-22.1	PK	123	1.7	Non-restricted	
4823.770	41.7	V	54.0	-12.3	AVG	57	1.3		
4823.770	50.5	V	74.0	-23.5	PK	57	1.3		

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band but the more stringent restricted band limit was used.

Run #1b: Center Channel 6 @ 2437 MHz



EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1b: Continued Run #1b: 3500 - 10,000 MHz, V/H 75.0 70.0 65.0 Amplitude (dBuV/m) 20.00 45.00 45.00 40.0 5000 5500 6000 6500 7500 8000 8500 9000 7000 Frequency (MHz) Run #1b: 10,000 - 18,000 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 40.0 30.0 10000 11000 12000 13000 14000 15000 16000 17000 18000 Frequency (MHz)

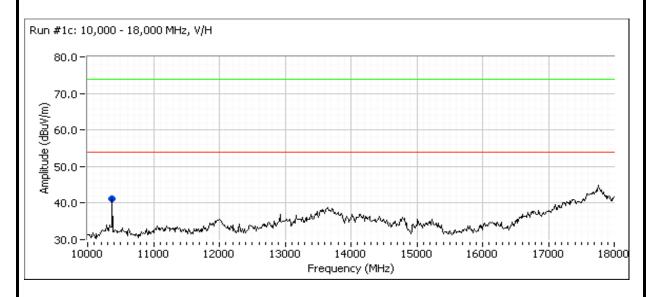
Elliott EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1b: Continued Preliminary Readings 15.209 / 15.247 Frequency Level Pol Detector Azimuth Height Comments Pk/QP/Avg MHz dBμV/m v/h Limit Margin degrees meters 3453.340 50.1 Н 54.0 -3.9 Peak 142 1.4 Non-restricted -7.3 266 2.0 1200.000 46.7 Η 54.0 Peak 285 1995.830 45.6 ٧ 54.0 -8.4 Peak 1.3 2433.330 44.4 ٧ 54.0 -9.6 Peak 89 1.3 4874.000 49.0 ٧ 54.0 -5.0 Peak 48 1.6 Н 117 5750.000 53.0 54.0 -1.0 Peak 1.7 Non-restricted 5190.000 44.7 ٧ 54.0 -9.3 Peak 257 1.6 Non-restricted 7310.830 44.7 ٧ 54.0 -9.3 Peak 72 1.0 ٧ 321 9749.170 47.1 54.0 -6.9Peak 1.9 Non-restricted 10373.33 40.3 ٧ 54.0 -13.7 240 1.6 Peak Non-restricted 14626.67 39.0 ٧ 54.0 -15.0 Peak 27 1.6 Non-restricted Maximized Readings 15.209 / 15.247 Pol Frequency Level Detector Azimuth Height Comments Pk/QP/Ava MHz dB_uV/m v/h Limit Margin degrees meters 3453.360 48.9 Н 54.0 -5.1 AVG 141 1.4 Non-restricted 51.4 3453.360 Н 74.0 -22.6 PΚ 141 1.4 Non-restricted 4873.960 46.7 ٧ 54.0 -7.3 AVG 49 1.6 4873.960 ٧ 74.0 -23.0 PK 49 1.6 51.0 54.0 AVG 297 5750.800 32.2 Η -21.8 1.0 Non-restricted, random spike 5750.800 43.0 Н 74.0 -31.0 PK 297 1.0 Non-restricted, random spike For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below Note 1: the level of the fundamental and measured in 100kHz. Note 2: No spurious emission, being 20-dB of the limit, were detected above 18GHz.

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1c: High Channel 11 @ 2462 MHz Run #1c: 1000 - 3500 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 0.09 0.07 20.0 1000 1750 2000 2500 3000 3250 3500 1250 1500 2250 2750 Frequency (MHz) Run #1c: 3500 - 10,000 MHz, V/H 75.0 70.0 65.0 45.0 45.0 45.0 45.0 45.0 40.0 30.0 -¦ 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000 Frequency (MHz)

EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Madali	WRT600N	T-Log Number:	T67324
Model.	VVR 1000IN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1c: Continued



Preliminary Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	$dB\mu V/m$	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3453.340	50.2	Н	54.0	-3.8	Peak	126	1.4	Non-restricted
1200.000	47.0	Н	54.0	-7.0	Peak	290	2.0	
1995.830	44.5	V	54.0	-9.5	Peak	282	1.3	
4923.980	46.2	V	54.0	-7.8	Peak	50	1.6	
5190.000	43.6	V	54.0	-10.4	Peak	255	1.6	Non-restricted
7386.670	42.4	V	54.0	-11.6	Peak	77	1.0	
9848.330	50.7	V	54.0	-3.3	Peak	108	1.0	Non-restricted
10373.33	41.1	V	54.0	-12.9	Peak	259	1.6	Non-restricted

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1c: Continued **Maximized Readings** 15.209 / 15.247 Pol Frequency Level Detector Azimuth Height Comments MHz $dB\mu V/m$ Pk/QP/Avg v/h Limit Margin degrees meters 3453.320 49.9 Н 54.0 -4.1 AVG 126 1.4 Non-restricted 52.8 74.0 -21.2 PK 126 3453.320 Η 1.4 Non-restricted ٧ 54.0 -9.3 AVG 51 1.6 4923.800 44.7 ٧ -25.2 PK 1.6 4923.800 48.8 74.0 51 9848.810 39.3 ٧ 54.0 -14.7 **AVG** 297 1.0 Non-restricted 9848.810 54.2 ٧ -19.8 PK 297 74.0 1.0 Non-restricted For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below Note 1: the level of the fundamental and measured in 100kHz. No spurious emission, being 20-dB of the limit, were detected above 18GHz. Note 2:

Elliott	EMC Test Data
Client: Cisco-Linksys	Job Number: J67313
Model: WRT600N	T-Log Number: T67324
Model. WK 1000N	Account Manager: -
Contact: Kevin Lee	

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

Standard: FCC 15.247

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

Class: N/A

specification listed above.

Date of Test: 3/26/2007 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 19.8 °C

Rel. Humidity: 43 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1 (802.11n Mode) 40MHz CDD MCS0	RE, 30 - 18000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	50.7dBµV/m (342.8µV/m) @ 3453.3MHz (-3.3dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

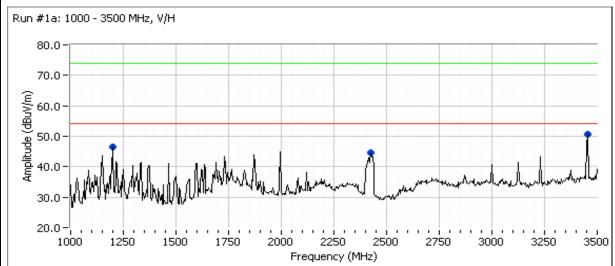
No deviations were made from the requirements of the standard.

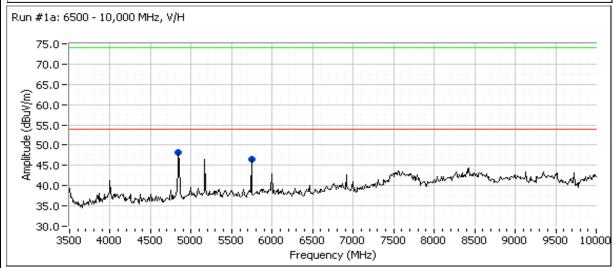
EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Madal	WRT600N	T-Log Number:	T67324
Model.	VVR 1000IN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 - 18000 MHz. Operating Mode: 802.11n

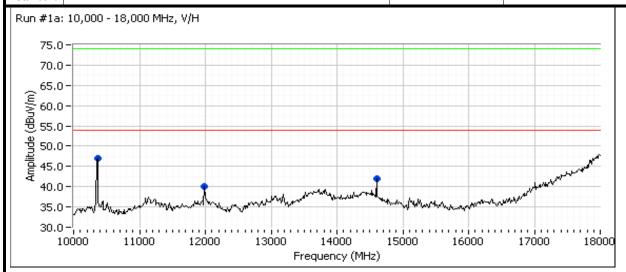
Run #1a: Low Channel 3 @ 2422 MHz





EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Model:	MADTEOON	T-Log Number:	T67324
	VVR 1000IN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A



Preliminary Readings

ı	Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
I	MHz	$dB\mu V/m$	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
I	3453.380	50.6	Н	54.0	-3.4	Peak	141	1.4	Non-restricted
I	1200.000	46.5	Н	54.0	-7.5	Peak	269	2.0	Non-restricted
I	2425.000	44.6	V	54.0	-9.4	Peak	204	1.0	Non-restricted
I	4843.870	48.3	V	54.0	-5.7	Peak	252	2.0	
I	5742.500	46.5	Н	54.0	-7.5	Peak	102	1.1	Non-restricted
I	10360.00	47.0	Н	54.0	-7.0	Peak	120	1.0	
I	11986.67	40.1	Н	54.0	-13.9	Peak	73	1.0	
I	14600.00	42.0	V	54.0	-12.0	Peak	228	1.0	

Maximized Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3453.370	49.4	Н	54.0	-4.6	AVG	141	1.4	Non-restricted
3453.370	52.0	Н	74.0	-22.0	PK	141	1.4	Non-restricted
4843.870	45.0	V	54.0	-9.0	AVG	252	1.9	
4843.870	50.2	V	74.0	-23.8	PK	252	1.9	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

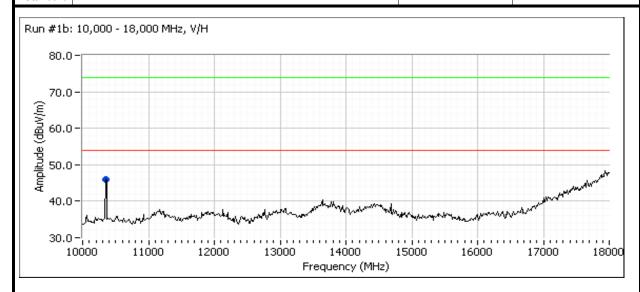
Note 2: No spurious emission, being 20-dB of the limit, were detected above 18GHz.

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1b: Center Channel 6 @ 2437 MHz Run #1b: 1000 - 3500 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 60.0 50.0 40.0 20.0 2500 2750 3000 3250 3500 1000 1250 1500 1750 2000 2250 Frequency (MHz) Run #1b: 3500 - 10,000 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 60.0 50.0 40.0 30.0 - | | | | | 5000 5500 6000 4000 4500 6500 7000 7500 8000 8500 9000 9500 10000 Frequency (MHz)

Elliott Client-Cisco-Linksys

EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Madal	WRT600N	T-Log Number:	T67324
wodei.	VVR 1000IN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A



Preliminary Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1200.000	49.8	Η	54.0	-4.2	Peak	294	2.0	
3453.340	51.6	Η	54.0	-2.4	Peak	111	2.0	
2420.250	47.3	V	54.0	-6.7	Peak	288	1.0	
4873.830	49.9	V	54.0	-4.1	Peak	254	1.9	
5168.330	46.0	V	54.0	-8.0	Peak	102	1.0	
9783.330	45.7	V	54.0	-8.3	Peak	74	1.9	
10346.67	45.9	Н	54.0	-8.1	Peak	120	1.0	

Maximized Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3453.320	50.7	Η	54.0	-3.3	AVG	110	2.0	
3453.320	52.9	Н	74.0	-21.1	PK	110	2.0	
1200.070	48.5	Н	54.0	-5.5	AVG	294	2.0	
1200.070	51.2	Н	74.0	-22.8	PK	294	2.0	
2420.620	44.5	V	54.0	-9.5	AVG	288	1.0	
2420.620	53.2	V	74.0	-20.8	PK	288	1.0	
4873.970	48.8	V	54.0	-5.2	AVG	253	1.9	
4873.970	54.1	V	74.0	-19.9	PK	253	1.9	

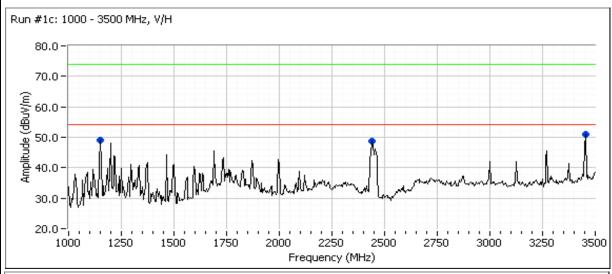
Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

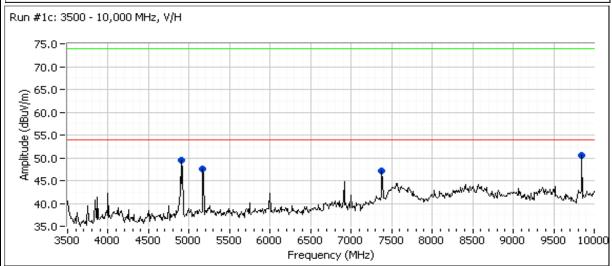
Client: Cisco-Linksys

EMC Test Data

•			
Client:	Cisco-Linksys	Job Number:	J67313
Madalı	WRT600N	T-Log Number:	T67324
wodei.	WRIOUUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

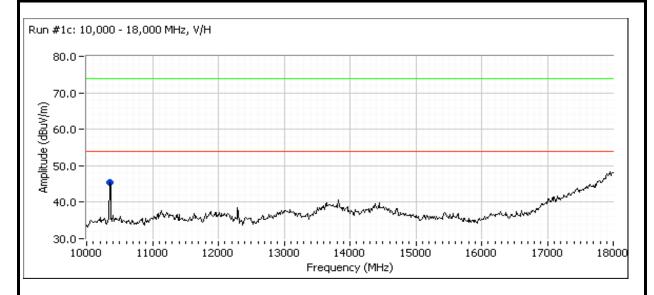
Run #1c: High Channel 9 @ 2452 MHz





EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Model:	MIDTEOON	T-Log Number:	T67324
	WKTOOON	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A



Preliminary Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10346.67	45.3	Η	54.0	-8.7	Peak	125	1.0	
1152.040	49.1	V	54.0	-4.9	Peak	222	1.6	
3453.340	50.9	Н	54.0	-3.1	Peak	114	2.0	
2439.780	48.6	V	54.0	-5.4	Peak	173	1.3	
4903.940	49.4	V	54.0	-4.6	Peak	239	1.9	
9843.910	50.6	V	54.0	-3.4	Peak	268	1.6	
5168.330	47.5	V	54.0	-6.5	Peak	62	1.3	
7378.330	47.1	V	54.0	-6.9	Peak	19	2.0	
10346.67	45.3	Н	54.0	-8.7	Peak	125	1.0	

Maximized Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1150.840	36.8	V	54.0	-17.2	AVG	222	1.6	
1150.840	52.5	V	74.0	-21.5	PK	222	1.6	
3453.220	50.7	Н	54.0	-3.3	AVG	113	2.0	
3453.220	52.9	Н	74.0	-21.1	PK	113	2.0	
2440.630	40.5	V	54.0	-13.5	AVG	173	1.3	
2440.630	49.1	V	74.0	-24.9	PK	173	1.3	
4903.880	49.3	V	54.0	-4.7	AVG	239	1.9	
4903.880	52.7	V	74.0	-21.3	PK	239	1.9	
9843.310	37.3	V	54.0	-16.7	AVG	268	1.6	
9843.310	48.5	V	74.0	-25.5	PK	268	1.6	
								<u> </u>

WE I	Elliott	EM	C Test Data
Client:	Cisco-Linksys	Job Number:	J67313
Model:	WRT600N	T-Log Number:	
		Account Manager:	-
	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A
	For emissions in restricted bands, the limit of 15.209 was used. For the level of the fundamental and measured in 100kHz.	r all other emissions, the	e limit was set 30dB below
Note 2:	No spurious emission, being 20-dB of the limit, were detected above	e 18GHz.	

6	Elliott	EMC Test Data			
Client:	Cisco-Linksys	Job Number:	J67313		
Model	WRT600N	T-Log Number:	T67324		
wodei.		Account Manager:	-		

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

Contact: Kevin Lee Standard: FCC 15.247

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the

Class: N/A

specification listed above.

Date of Test: 3/26/2007 Config. Used: 1 Test Engineer: Rafael Varelas Config Change: None Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 20.1 °C

Rel. Humidity: 45 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1 (802.11n Mode) 40MHz SISO	RE, 30 - 18000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	50.0dBµV/m (316.2µV/m) @ 3453.3MHz (-4.0dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

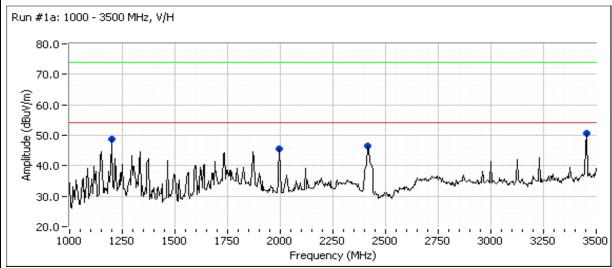
No deviations were made from the requirements of the standard.

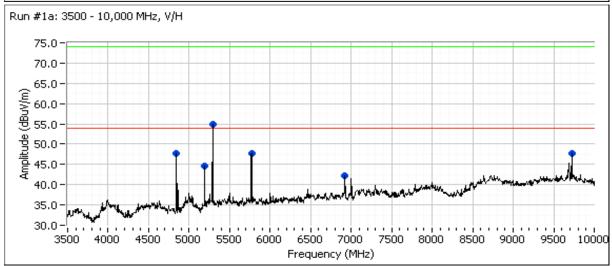
EMC Test Data

•			
Client:	Cisco-Linksys	Job Number:	J67313
Model:	MIDTEOON	T-Log Number:	T67324
	WRIOUUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 - 18000 MHz. Operating Mode: 802.11n

Run #1a: Low Channel 3 @ 2422 MHz

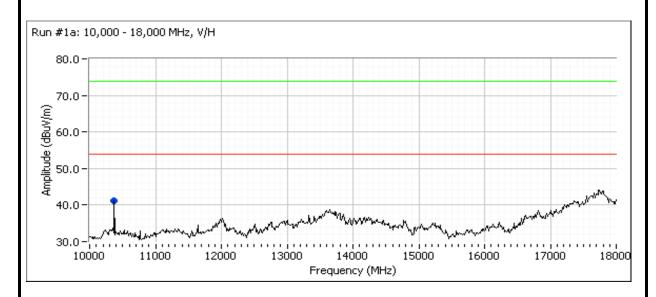




EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Model:	MIDTEOON	T-Log Number:	T67324
	VVR 1000IN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1a: Continued



Preliminary Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1200.000	48.8	Н	54.0	-5.2	Peak	253	2.0	
3453.340	50.7	Н	54.0	-3.3	Peak	129	1.4	Non-restricted
1995.830	45.6	V	54.0	-8.4	Peak	285	1.3	Non-restricted
2412.500	46.4	V	54.0	-7.6	Peak	124	1.3	Non-restricted
4843.980	47.6	V	54.0	-6.4	Peak	49	1.6	
5190.000	44.6	V	54.0	-9.4	Peak	256	1.6	Non-restricted
5270.000	54.9	Н	-	-	Peak	103	1.7	Non-restricted
5770.000	47.7	Н	54.0	-6.3	Peak	99	1.7	Non-restricted
6920.000	42.2	Н	54.0	-11.8	Peak	260	1.4	Non-restricted
9725.830	47.6	V	54.0	-6.4	Peak	269	2.0	Non-restricted
10373.33	41.1	V	54.0	-12.9	Peak	248	1.3	

Client: Cisco-Linksys Model: WRT600N Contact: Kevin Lee Standard: FCC 15.247 Run #1a: Continued EMC Test Data Job Number: J67313 T-Log Number: T67324 Account Manager: Class: N/A

Maximized Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	$dB\mu V/m$	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
3453.390	49.9	Н	54.0	-4.1	AVG	129	1.4	Non-restricted	
3453.390	52.6	Н	74.0	-21.4	PK	129	1.4	Non-restricted	
1199.990	48.1	Н	54.0	-5.9	AVG	252	2.0		
1199.990	50.2	Н	74.0	-23.8	PK	252	2.0		
4843.960	45.5	V	54.0	-8.5	AVG	43	1.6		
4843.960	48.0	V	74.0	-26.0	PK	43	1.6		
5270.420	32.6	Н	54.0	-21.4	AVG	103	1.7	Non-restricted, random spike	
5270.420	44.3	Н	74.0	-29.7	PK	103	1.7	Non-restricted, random spike	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

Note 2: No spurious emission, being 20-dB of the limit, were detected above 18GHz.

Non-restricted band emissions that exceeded 15.209 limits.

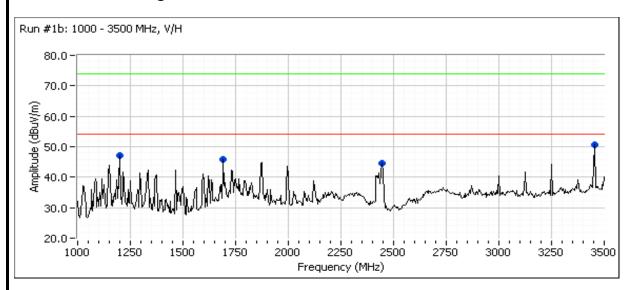
Measurements taken using RBW=VBW=100 kHz

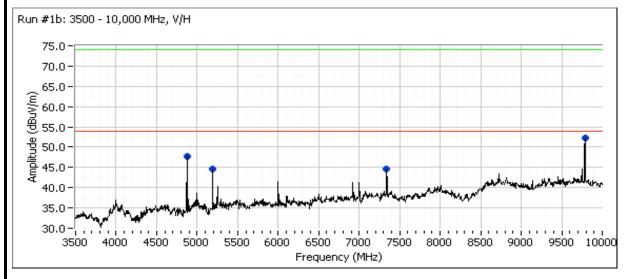
		· · · · · ·						
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2448.500	96.2	V	-	-	-	258	1.0	Fundamental
2455.580	97.6	Η	-	-	-	288	1.0	Fundamental
5258.200	37.4	V	66.2	-28.8	pk	118	1.0	
5250.130	40.7	Н	67.6	-26.9	pk	324	1.0	

EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Model:	MIDTEOON	T-Log Number:	T67324
	VVR 1000IN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1b: Center Channel 6 @ 2437 MHz





EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1b: 10,000 - 18,000 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 60.0 50.0 40.0 30.0 10000 11000 12000 13000 14000 15000 16000 17000 18000 Frequency (MHz) Preliminary Readings 15.209 / 15.247 Pol Frequency Level Detector Azimuth Height Comments Pk/QP/Ava MHz $dB\mu V/m$ v/h Limit Margin degrees meters 3453.340 50.7 Н 54.0 -3.3 124 1.7 Peak Non-restricted 1200.000 47.0 Η 54.0 -7.0 Peak 282 2.0 1691.670 45.7 ٧ 54.0 -8.3 Peak 244 1.0 2445.830 44.5 ٧ 54.0 -9.5 Peak 347 1.3 4874.03 47.7 ٧ 54.0 -6.3 50 1.6 Peak 5190.00 44.7 ٧ 54.0 -9.3 Peak 256 1.6 7336.16 44.6 ٧ 54.0 -9.4 89 1.0 Peak 9791.90 ٧ 343 1.6 52.3 54.0 -1.7 Peak Non-restricted ٧ 227 10373.33 39.8 54.0 -14.2Peak 1.6 14693.33 41.5 ٧ 54.0 -12.5 Peak 54 1.6 Maximized Readings Level Pol 15.209 / 15.247 Detector Height Comments Frequency Azimuth MHz $dB\mu V/m$ v/h Limit Margin Pk/QP/Avg degrees meters 3453.250 50.0 Η 54.0 -4.0 **AVG** 124 1.7 Non-restricted 3453.250 -21.5 PK 124 1.7 52.5 Н 74.0 Non-restricted ٧ 54.0 **AVG** 51 4873.920 46.0 -8.0 1.6 4873.920 48.8 ٧ 74.0 -25.2 PΚ 51 1.6 9791.930 ٧ 54.0 **AVG** 360 1.0 35.2 -18.8Non-restricted, random spike

Noto 1.	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below
	the level of the fundamental and measured in 100kHz.
Note 2:	No spurious emission, being 20-dB of the limit, were detected above 18GHz

PΚ

46.7

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74.0

-27.3

9791.930

360

1.0

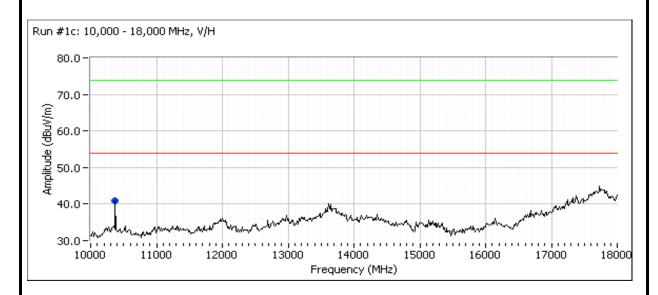
Non-restricted, random spike

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1c: High Channel 9 @ 2452 MHz Run #1c: 1000 - 3500 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 0.00 0.00 40.00 20.0 1750 2000 2500 2750 3000 3250 3500 1000 1250 1500 2250 Frequency (MHz) Run #1c: 3500 - 10,000 MHz, V/H 75.0 70.0 65.0-45.0.0 (dg/m//m) 45.0.0 (dg/m//m) 40.0 4000 5500 3500 4500 5000 6000 6500 7000 7500 8000 8500 9000 9500 10000 Frequency (MHz)

EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Model:	MOTEOON	T-Log Number:	T67324
	WRIOUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1c: Continued



Preliminary Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3453.340	50.6	Η	54.0	-3.4	Peak	129	1.7	Non-restricted
1200.000	46.7	Η	54.0	-7.3	Peak	260	1.4	
1995.830	45.0	V	54.0	-9.0	Peak	286	1.3	Non-restricted
1870.830	44.5	Η	54.0	-9.5	Peak	318	1.4	Non-restricted
4903.980	47.4	V	54.0	-6.6	Peak	53	1.6	
5190.000	44.2	V	54.0	-9.8	Peak	254	1.6	Non-restricted
7001.670	41.2	Η	54.0	-12.8	Peak	76	1.1	Non-restricted
9848.330	50.3	V	54.0	-3.7	Peak	78	1.3	Non-restricted
10373.33	40.9	V	54.0	-13.1	Peak	265	1.6	Non-restricted

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1c: Continued **Maximized Readings** 15.209 / 15.247 Frequency Level Pol Detector Azimuth Height Comments MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 3453.390 49.2 AVG Η 54.0 -4.8 129 1.7 Non-restricted 74.0 -21.9 PK 129 3453.390 52.1 Η 1.7 Non-restricted 4904.010 ٧ AVG 54 46.7 54.0 -7.3 1.6 4904.010 49.2 ٧ 74.0 -24.8 PΚ 54 1.6 9839.030 36.0 ٧ -18.0 AVG 1.0 54.0 151 Non-restricted, random spike ٧ 9839.030 47.1 74.0 -26.9 PΚ 151 1.0 Non-restricted, random spike For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below Note 1: the level of the fundamental and measured in 100kHz. Note 2: No spurious emission, being 20-dB of the limit, were detected above 18GHz.

EMC Test Data

•			
Client:	Cisco-Linksys	Job Number:	J67313
Model:	MIDTEOON	T-Log Number:	T67324
	VVR 1000IN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 3/20/2007 Config. Used: 1 Test Engineer: Rafael Varelas Config Change: None Test Location: Fremont Chamber #3 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 20.6 °C

Rel. Humidity: 45 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1 (802.11b Mode)	RE, 30 - 18000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	49.7dBµV/m (305.5µV/m) @ 3453.4MHz (-4.3dB)
2 (802.11g Mode)	RE, 30 - 18000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	49.9dBµV/m (312.6µV/m) @ 3453.2MHz (-4.1dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

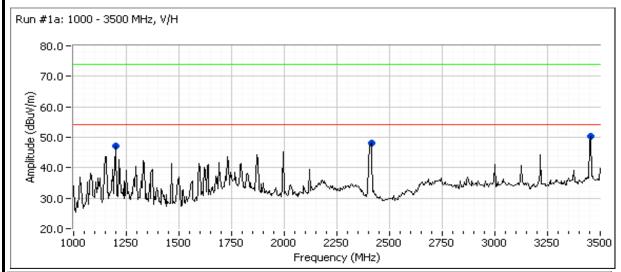
No deviations were made from the requirements of the standard.

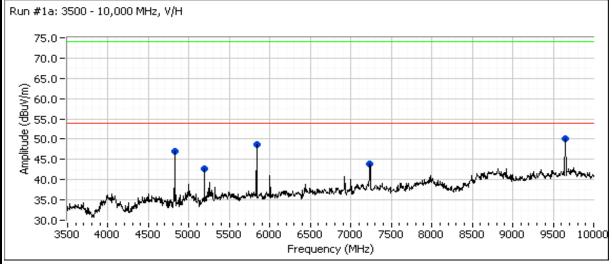
EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Model:	WRT600N	T-Log Number:	T67324
		Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 18000 MHz. Operating Mode: 802.11b

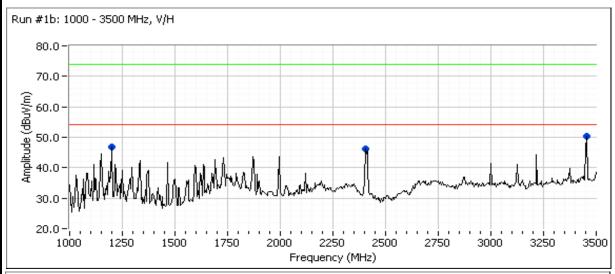
Run #1a: Low Channel 1 @ 2412 MHz

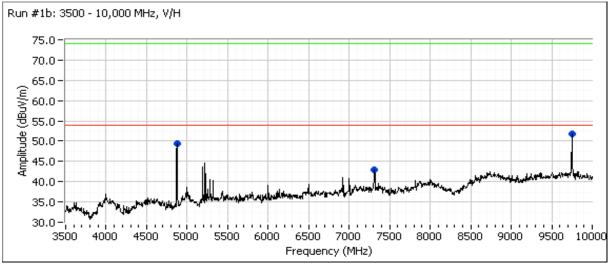




EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1a: 10,000 - 18,000 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 60.0 50.0 40.0 30.0 10000 11000 12000 13000 14000 15000 16000 17000 18000 Frequency (MHz) Preliminary Readings Frequency Pol 15.209 / 15.247 Detector Azimuth Comments Level Height MHz $dB\mu V/m$ v/h Limit Margin Pk/QP/Avg degrees meters 2.0 1200.000 47.0 Η 54.0 -7.0Peak 267 2414.790 48.2 ٧ 222 54.0 -5.8 Peak 1.0 Non-restricted 3453.340 50.4 Н 54.0 -3.6 Peak 135 1.4 Non-restricted 4824.000 47.1 ٧ 54.0 -6.9 Peak 111 1.3 48.7 ٧ -5.3 75 2.2 5835.000 54.0 Peak Non-restricted ٧ 54.0 265 5190.000 42.7 -11.3Peak 1.6 Non-restricted 7235.000 43.8 ٧ 54.0 -10.2Peak 94 1.3 Non-restricted 9648.000 ٧ -3.9 96 1.6 50.1 54.0 Peak Non-restricted 275 10373.33 40.4 Н 54.0 -13.6 Peak 1.3 Non-restricted 14480.00 39.7 ٧ 54.0 -14.3Peak 67 1.0 Maximized Readings 15.209 / 15.247 Frequency Level Pol Detector Azimuth Height Comments MHz Pk/QP/Avq $dB\mu V/m$ v/h Limit Margin degrees meters 3453.400 49.7 Η 54.0 -4.3**AVG** 135 1.4 Non-restricted 3453.400 52.0 Н 74.0 -22.0 PΚ 135 1.4 Non-restricted ٧ 222 2414.600 39.3 54.0 -14.7 **AVG** 1.0 Non-restricted ٧ -28.2 222 2414.600 45.8 74.0 PK 1.0 Non-restricted 54.0 4824.040 45.8 ٧ -8.2 **AVG** 108 1.3 4824.040 ٧ 48.6 74.0 -25.4PK 108 1.3 9647.670 45.4 ٧ 54.0 **AVG** 305 1.7 -8.6 Non-restricted 9647.670 ٧ -23.3 PΚ 50.7 74.0 305 1.7 Non-restricted For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below Note 1: the level of the fundamental and measured in 100kHz. No spurious emission, being 20-dB of the limit, were detected above 18GHz. Note 2:

Eliott EMC Test Data Client: Cisco-Linksys Job Number: J67313 Model: WRT600N T-Log Number: T67324 Contact: Kevin Lee Account Manager: Standard: FCC 15.247 Class: N/A Run #1b: Center Channel 6 @ 2437 MHz





EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1b: 10,000 - 18,000 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 60.0 50.0 40.0 30.0 10000 11000 12000 13000 14000 15000 16000 18000 17000 Frequency (MHz) Preliminary Readings 15.209 / 15.247 Pol Frequency Level Detector Azimuth Height Comments Pk/QP/Ava MHz $dB\mu V/m$ v/h Limit Margin degrees meters 1200.000 46.7 Н 54.0 -7.3 286 2.0 Peak 2404.170 46.1 54.0 -7.9 Peak 309 1.3 3453.340 50.2 Η 54.0 -3.8 Peak 140 1.4 Non-restricted 4874.000 49.5 ٧ 54.0 -4.5 66 1.3 Peak 43.0 ٧ 54.0 -11.0 67 1.3 7310.830 Peak 9748.000 51.8 Η 54.0 -2.2 Peak 68 1.0 Non-restricted 10373.33 45.4 Н 54.0 -8.6 271 1.0 Peak Non-restricted 44.3 62 1.0 14626.67 54.0 -9.7 Peak Non-restricted Maximized Readings 15.209 / 15.247 Frequency Pol Level Detector Azimuth Height Comments MHz $dB\mu V/m$ v/h Limit Margin Pk/QP/Avg degrees meters 3453.350 49.0 Η 54.0 -5.0**AVG** 140 1.4 Non-restricted 3453.350 52.0 Η 74.0 -22.0 PΚ 140 1.4 Non-restricted 4873.940 48.1 ٧ 54.0 -5.9 **AVG** 68 1.3 ٧ 1.3 4873.940 50.4 74.0 -23.6 PΚ 68 206 9747.850 44.7 Η 54.0 -9.3 **AVG** 1.0 Non-restricted

	Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below
	Note 1:	the level of the fundamental and measured in 100kHz.
	Note 2.	No spurious emission, being 20-dB of the limit, were detected above 18GHz

PΚ

-23.3

74.0

50.7

Η

9747.850

206

1.0

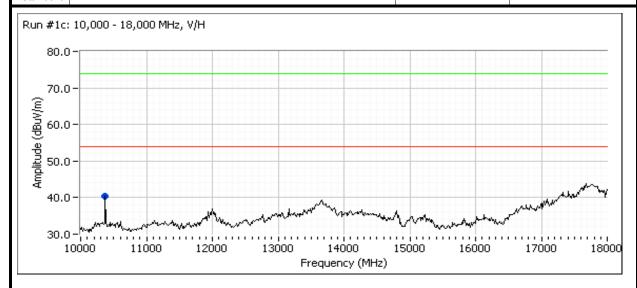
Non-restricted

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #1c: High Channel 11 @ 2462 MHz Run #1c: 1000 - 3500 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 0.00 0.00 40.0 20.0 1000 1500 1750 2500 3000 3250 3500 1250 2000 2250 2750 Frequency (MHz) Run #1c: 3500 - 10,000 MHz, V/H 75.0 70.0 65.0 65.0 65.0 60.0 65.0 65.0 65.0 65.0 65.0 65.0 65.0 60.0 40.0 30.0 -¦ ¦ 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000 Frequency (MHz)

Elliott

EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
wodei.	WRIOUUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A



Preliminary Readings

Frequency	Level	Pol	15.209	15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3453.380	50.6	Η	54.0	-3.4	Peak	141	1.4	Non-restricted
1200.000	46.3	Η	54.0	-7.7	Peak	261	2.0	
2454.170	46.2	V	54.0	-7.8	Peak	295	1.3	
4923.980	47.2	V	54.0	-6.8	Peak	81	1.9	
5190.000	44.6	V	54.0	-9.4	Peak	255	1.6	
7386.670	44.1	V	54.0	-9.9	Peak	91	1.3	
9848.330	56.2	V	-	1	Peak	91	1.0	Non-restricted
10373.33	40.3	V	54.0	-13.7	Peak	235	1.3	Non-restricted

Maximized Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3453.300	49.1	Н	54.0	-4.9	AVG	140	1.4	Non-restricted
3453.300	51.8	Н	74.0	-22.2	PK	140	1.4	Non-restricted
4923.900	48.9	V	54.0	-5.1	AVG	80	1.4	
4923.900	51.8	V	74.0	-22.2	PK	80	1.4	

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Non-restricted band emissions that exceeded 15.209 limits. Measurements taken using RBW=VBW=100 kHz Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz $dB\mu V/m$ v/h Limit Margin Pk/QP/Avg degrees meters 2459.150 103.0 ٧ 307 1.0 **Fundamental** 2461.200 100.3 Н 225 1.0 Fundamental ٧ 83.0 -29.5 9847.920 53.5 pk 342 1.0 9847.870 Н 80.3 293 1.0 54.3 -26.0 pk For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below Note 1: the level of the fundamental and measured in 100kHz. No spurious emission, being 20-dB of the limit, were detected above 18GHz. Note 2:

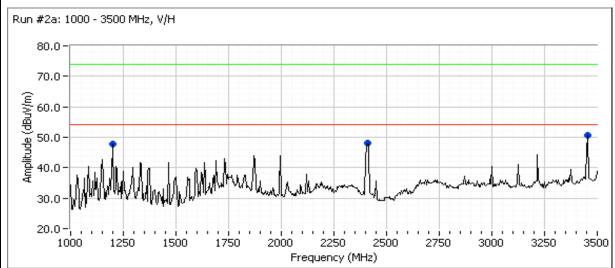
Elliott

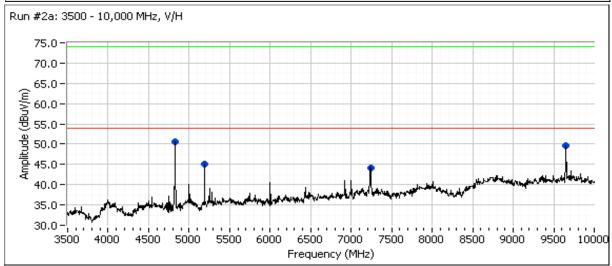
EMC Test Data

•			
Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
wodei.	WRIOUUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A

Run #2: Radiated Spurious Emissions, 1000 - 18000 MHz. Operating Mode: 802.11g

Run #2a: Low Channel 1 @ 2412 MHz

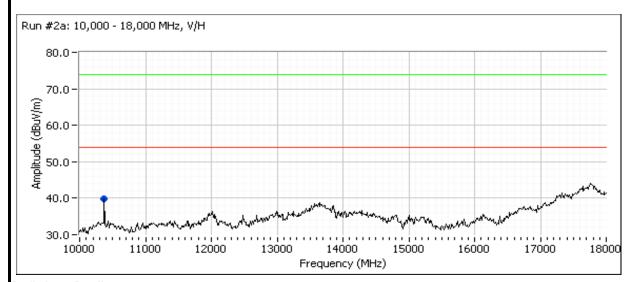




Client: Cisco-Linksys Model: WRT600N

EMC Test Data

•			
Client:	Cisco-Linksys	Job Number:	J67313
Model	WRT600N	T-Log Number:	T67324
wodei.	WKTOOON	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A



Preliminary Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1200.000	47.8	Η	54.0	-6.2	Peak	295	1.4	
2408.330	48.2	Η	54.0	-5.8	Peak	258	1.4	
3453.340	50.7	Н	54.0	-3.3	Peak	134	1.4	Non-restricted
4823.980	50.6	V	54.0	-3.4	Peak	55	1.3	
5190.000	45.1	V	54.0	-8.9	Peak	255	1.6	Non-restricted
7240.830	44.1	V	54.0	-9.9	Peak	64	1.9	Non-restricted
9650.000	49.6	V	54.0	-4.4	Peak	107	1.0	Non-restricted
10373.33	39.8	V	54.0	-14.2	Peak	232	1.3	Non-restricted

Maximized Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3453.200	49.9	Η	54.0	-4.1	AVG	133	1.4	Non-restricted
3453.200	52.5	Η	74.0	-21.5	PK	133	1.4	Non-restricted
4823.960	43.2	٧	54.0	-10.8	AVG	56	1.3	
4823.960	48.8	V	74.0	-25.2	PK	56	1.3	
9646.820	37.5	V	54.0	-16.5	AVG	212	1.0	Non-restricted
9646.820	48.2	V	74.0	-25.8	PK	212	1.0	Non-restricted

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

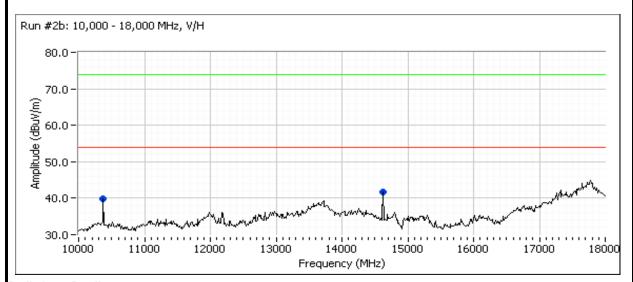
Note 2: No spurious emission, being 20-dB of the limit, were detected above 18GHz.

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #2b: Center Channel 6 @ 2437 MHz Run #2b: 1000 - 3500 MHz, V/H 80.0 70.0 (m/Angp) 50... 40.0 20.0 1250 1750 2000 2750 3000 3250 3500 1000 1500 2250 2500 Frequency (MHz) Run #2b: 3500 - 10,000 MHz, V/H 75.0 70.0 65.0-45.0.0 (dg/m//m) 45.0.0 (dg/m//m) 40.0 4000 5500 3500 4500 5000 6000 6500 7000 7500 8000 8500 9000 9500 10000 Frequency (MHz)

Elliott Client: Cisco-Linksys

EMC Test Data

Client:	Cisco-Linksys	Job Number:	J67313
Madalı	WRT600N	T-Log Number:	T67324
wodei.	WRIOUN	Account Manager:	-
Contact:	Kevin Lee		
Standard:	FCC 15.247	Class:	N/A



Preliminary Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3453.340	50.4	Η	54.0	-3.6	Peak	142	1.4	Non-restricted
1200.000	47.3	Η	54.0	-6.7	Peak	269	2.0	
2412.500	47.5	Н	54.0	-6.5	Peak	240	1.0	
4874.000	47.7	V	54.0	-6.3	Peak	83	1.6	
5190.000	44.9	V	54.0	-9.1	Peak	257	1.6	Non-restricted
7310.830	44.4	V	54.0	-9.6	Peak	29	2.5	
9749.170	51.1	V	54.0	-2.9	Peak	87	1.6	Non-restricted
10373.33	39.9	V	54.0	-14.1	Peak	259	1.6	Non-restricted
14626.67	41.7	V	54.0	-12.3	Peak	192	1.6	Non-restricted

Maximized Readings

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3453.410	49.0	Н	54.0	-5.0	AVG	141	1.4	Non-restricted
3453.410	51.5	Н	74.0	-22.5	PK	141	1.4	Non-restricted
4874.090	46.5	V	54.0	-7.5	AVG	81	1.6	
4874.090	50.4	V	74.0	-23.6	PK	81	1.6	
9747.930	37.0	V	54.0	-17.0	AVG	360	1.0	Non-restricted
9747.930	46.8	V	74.0	-27.2	PK	360	1.0	Non-restricted

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.

Note 2: No spurious emission, being 20-dB of the limit, were detected above 18GHz.

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #2c: High Channel 11 @ 2462 MHz Run #2c: 1000 - 3500 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 0.09 0.07 20.0 2500 2750 3000 3250 3500 1000 1250 1500 1750 2000 2250 Frequency (MHz) Run #2c: 3500 - 10,000 MHz, V/H 75.0 70.0 65.0 45.0.0 (dg/m//m) 45.0.0 (dg/m//m) 40.0 30.0 - , , 5000 3500 4000 4500 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000 Frequency (MHz)

EMC Test Data Job Number: J67313 Client: Cisco-Linksys T-Log Number: T67324 Model: WRT600N Account Manager: Contact: Kevin Lee Standard: FCC 15.247 Class: N/A Run #2c: 10,000 - 18,000 MHz, V/H 80.0 70.0 Amplitude (dBuV/m) 40.0 10000 11000 12000 13000 14000 15000 16000 17000 18000 Frequency (MHz) Preliminary Readings 15.209 / 15.247 Frequency Level Pol Detector Azimuth Height Comments MHz $dB\mu V/m$ v/h Limit Margin Pk/QP/Ava degrees meters 1200.000 47.8 Н 54.0 -6.2 266 2.0 Peak 1995.830 44.6 54.0 -9.4 Peak 283 1.3 3453.340 50.2 Η 54.0 -3.8 Peak 138 1.4 Non-restricted 4923.980 ٧ 54.0 -8.3 79 1.3 45.7 Peak 44.6 ٧ 54.0 -9.4 257 5190.000 Peak 1.6 Non-restricted 7392.500 45.7 ٧ 54.0 -8.3 Peak 86 2.2 9848.000 ٧ 54.0 1.3 271 1.6 55.3 Peak Non-restricted -13.6 227 10373.33 40.4 ٧ 54.0 Peak 1.3 Non-restricted 14773.33 41.6 ٧ 54.0 -12.4Peak 77 1.3 Non-restricted Maximized Readings 15.209 / 15.247 Frequency Level Pol Detector Azimuth Height Comments MHz $dB\mu V/m$ Limit Margin Pk/QP/Avg v/h degrees meters 3453.340 49.1 Η 54.0 -4.9 **AVG** 138 1.4 Non-restricted 3453.340 51.6 Н 74.0 -22.4 PΚ 138 1.4 Non-restricted ٧ 4924.280 43.5 54.0 -10.5 **AVG** 81 1.3 ٧ -25.8 PΚ 4924.280 48.2 74.0 81 1.3 9848.280 38.7 ٧ 54.0 -15.3 **AVG** 143 1.0 Non-restricted

	Noto 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below
		the level of the fundamental and measured in 100kHz.
	Note 2:	No spurious emission, being 20-dB of the limit, were detected above 18GHz.

PK

48.1

9848.280

٧

74.0

-25.9

143

1.0

Non-restricted

EXHIBIT 3: Photographs of Test Configurations

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EXHIBIT 4: Proposed FCC ID Label & Label Location

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EXHIBIT 5: Detailed Photographs of Cisco-Linksys Model WRT600NConstruction

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EXHIBIT 6: Operator's Manual for Cisco-Linksys Model WRT600N

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EXHIBIT 7: Block Diagram of Cisco-Linksys Model WRT600N

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EXHIBIT 8: Schematic Diagrams for Cisco-Linksys Model WRT600N

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EXHIBIT 9: Theory of Operation for Cisco-Linksys Model WRT600N

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EXHIBIT 10: RF Exposure Information

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